

Amphenol

# Standard Size Military Connectors

CATALOG  
A-6



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The majority of the connectors listed in this catalog are cylindrical power connectors as defined by MIL-C-5015—in other words, MS (or AN) connectors. However, it also covers other designs commonly used in military equipment, including a number of rack and panel connectors, high temperature connectors, explosion proof connectors, submersion proof connectors, hermetically sealed connectors, and others.

This catalog covers only standard sizes. Miniature military connectors, such as those defined by MIL-C-26500 (USAF), are cataloged in a separate AMPHENOL publication. Specialized missile and rocket connectors and harness assemblies are covered in yet another.

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## Circular Blue Ribbon Connectors

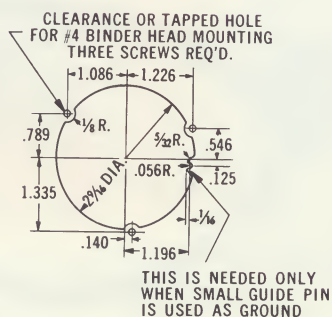
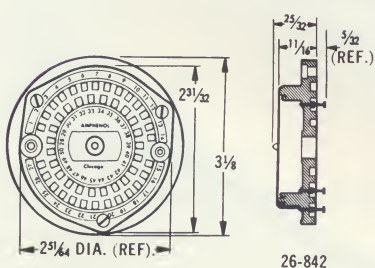
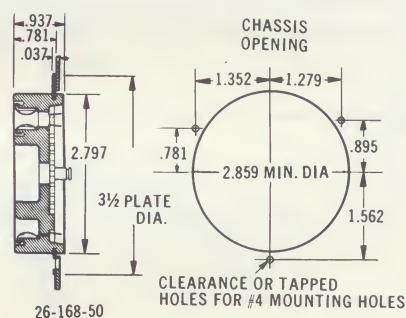
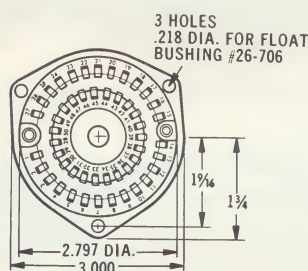
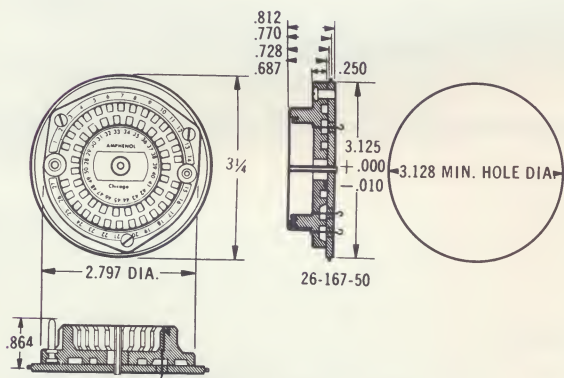
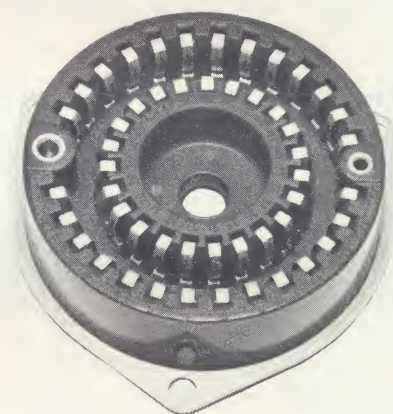
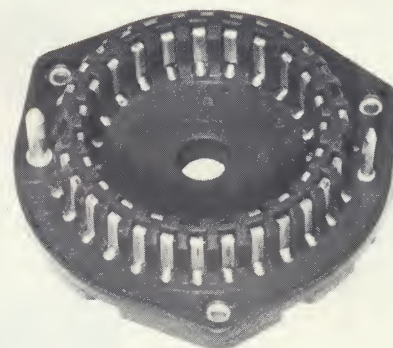
Space-saving connectors for quick and easy breaking of 50 circuits. Body diameter is less than 3 inches. Originally developed for avionic use, these mating connectors have since offered solutions to a wide variety of other limited space applications.

### 26-842 Plugs 26-168-50 Receptacles

Bodies are of molded diallyl phthalate and contacts are gold-plated, as on all Blue Ribbon connectors. Polarization and positive mating are achieved by dual, dissimilar guide pins and sockets, and by a center pin and bushing.

### 26-167-50 Plug—Hermetic Seal

Like the 26-842, but each contact has a glass bead. The glass is bonded to the seal plate under compression, the most efficient sealing method. Connectors are completely inspected and tested before shipment. This plug mates with the 26-168-50 receptacle.

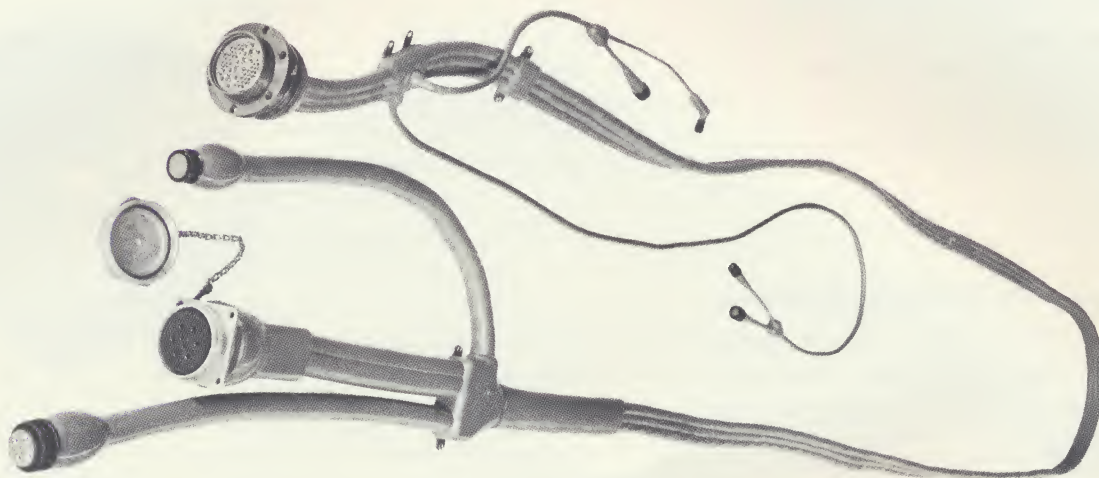


Voltage Rating: 5 AMPS { 750 Volts D.C. at Sea Level  
300 Volts D.C. at 60,000 Feet Altitude

### ORDERING INFORMATION

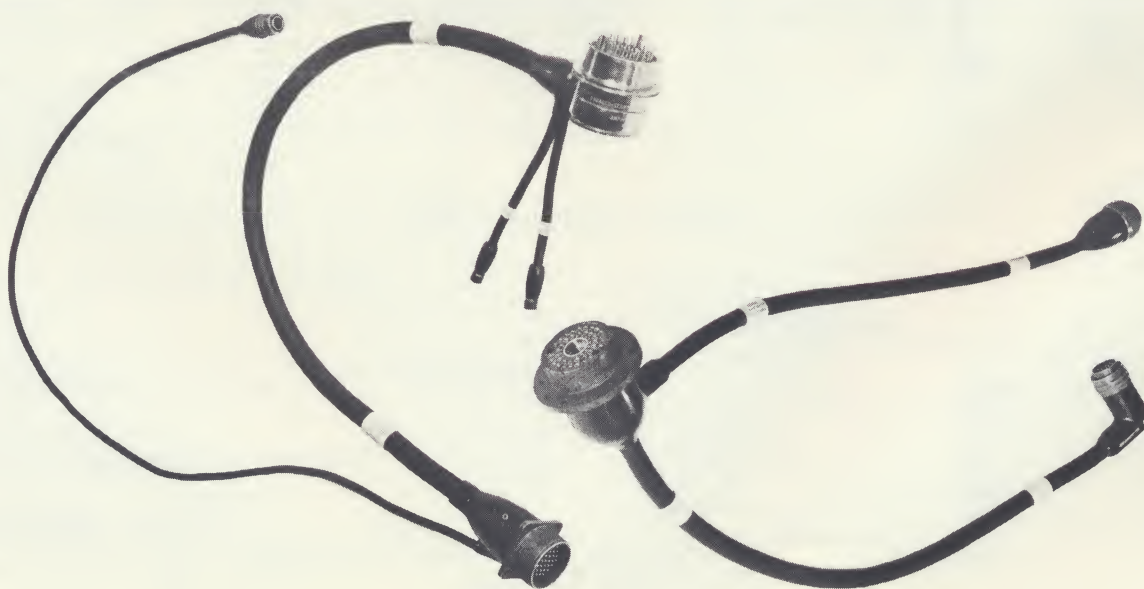
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26-842	50	





AMPHENOL is ready, willing, and able to help you with any cable assembly requirement. You will have the advantage of AMPHENOL experience and know-how developed through more than twenty years of working with the very specialized and complex problems, both in design and manufacture, that are associated with cable harness and assembly projects. AMPHENOL takes complete responsibility for all the innumerable details of component procurement, fixture construction, checkout procedure and equipment, etc., leaving you free to concentrate on engineering.

AMPHENOL facilities include the best materials laboratory in the industry, where even a mass spectrometer is available to help you evaluate and select the materials appropriate to your environmental and functional requirements. AMPHENOL'S "white rooms", with dust-free, controlled environment conditions, are available for assembly operations when you require the ultimate in contaminant-free conditions. But perhaps most important, you can trust the experience, knowledge, and judgment of the AMPHENOL team of cable assembly specialists. From ultra-sophisticated, one or two of a kind exotics to simple commercial wiring harnesses by the thousands, AMPHENOL can help you. Talk to your AMPHENOL man or contact the AMPHENOL Area Division facility near you. You'll find names and addresses on the back cover.





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## BASIC DATA

### MS Connectors

#### NOMENCLATURE

The MS prefix in a connector part number indicates an approved connector under the current military specification, MIL-C-5015.

A 97 prefix indicates that the connector is of exclusive AMPHENOL design, probably a connector with special purpose contacts and a variation from MS requirements or one for which no MS part number has yet been assigned.

A 69 prefix indicates an environmentally resistant connector with crimp Poke Home® contacts. These

connectors, which are interchangeable with standard MS types, offer improved "R" performance over MIL-C-5015 requirements.

*Interchangeability of MS and AN Connectors.* In accordance with MIL-C-5015, "Connectors bearing an MS part number may replace an AN marked connector of any modification marking if all other identifying symbols are identical." However, if a contract requires use of connectors with the formerly approved marking, these are still available from AMPHENOL.

#### CONSTRUCTIONS

Constructions approved under MIL-C-5015 include solid shell, split shell, pressurized, and environmental resistant. With AMPHENOL's new environmental resistant construction, connectors are shorter, and mechanically superior to those of standard design. High-temperature and explosion proof constructions as well as constructions for potting are also offered. See How to Order table on page 7 or indexes on pages 1, 2, and 3.

In pressurized connectors, AMPHENOL (404) construction is used for one-piece molded-in-pin inserts

and (407) for two-piece inserts. In (404) construction, synthetic rubber sealant is injected into a groove formed between insert and shell to provide a highly effective "O" ring, chemically bonded to shell and insert. This forms a moisture barrier and assures a positive seal from  $-55^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$ . In (407) construction, there is a rubber gasket between front and rear inserts. This is coated, cured and bonded under heat and pressure to insert surfaces and shell. This effects a moisture barrier and provides pressurizing from  $-55^{\circ}\text{C}$  to  $+135^{\circ}\text{C}$ .

#### SHELLS

Wall receptacles, cable receptacles, box receptacles, straight plugs, quick disconnect plugs, and angle plugs are available from AMPHENOL. Shell sizes are indicated by code numbers 8, 10, 12, and so on, representing the

"A" threads in 16ths. Dimensions for these size classes vary according to the construction; they are given on the pages covering each shell type. See indexes on pages 1, 2, and 3.

#### FINISHES

The standard finish is cadmium plate with olive drab chromate conversion coating. This finish has excellent conductivity, is non-reflecting, and corrosion resistant. Special finishes available are:

No. 639—Clear Cadmium Plate

No. 604—Anodized with bichromate seal, overall finish.

No. 704—Anodized with bichromate seal, masked for electrical continuity.

No. 608—Black anodized, overall finish.

No. 708—Black anodized, masked for electrical continuity.

NOTE! Anodic finishes are non-conducting. When anodic finishes are used and it is necessary to retain electrical continuity through the shell for grounding purposes, the 704 or 708 finishes should be specified. When so ordered, the connectors will be supplied with conducting surfaces of the shells unfinished. When an overall anodic finish is desired, specify finish 604 or 608. Threads on connectors ordered with special anodic finishes are slightly undersized as compared with standard cadmium plated connectors, since anodizing does not add to the thickness of the base aluminum, while cadmium plating does.



## INSERTS

The dielectric material used in inserts for A, B, and C constructions is diallyl phthalate, a resin developed by AMPHENOL and now widely used throughout the electronics industry. Diallyl phthalate has near perfect dimensional stability, high arc resistance, and maintains high insulation resistance under both humidity and thermal stress. Lifetime shrinkage is less than 0.3%. Arc resistance exceeds 135 seconds in the standard ASTM test. Exposure for thousands of hours at 160° F and 95% relative humidity does not critically affect insulation properties. Diallyl phthalate material performs satisfactorily in ambients to 257° F, depending on current load.

Insert material in R construction connectors is MIL approved neoprene.

Contact arrangements in the inserts, insert current and voltage ratings, and insert numbers are the same for all MS constructions. Alternate insert positions are available for most inserts, to prevent mismatching where several similar connectors are used. Insert availability in the various shell types, insert configurations, and alternate insert positions are shown in the MS Connector Availability table, pages 24-61, in sequence by number of contacts. An insert index, in sequence by insert number, is on page 62.

## CONTACTS

**Standard**—MS contacts under MIL-C-5015 are silver plated and have pretinned solder pockets. AMPHENOL also offers as optional a superior gold plating process for MS contacts. Pioneered by AMPHENOL, gold over silver plate provides a better contact surface, easily and quickly solderable, and free of oxidation coatings.

AMPHENOL size 16 socket contacts are hooded to prevent entry of an over-size probe. The design also provides for engagement with a mating pin at a point further forward than on any other contact in use for MS connectors, thus allowing for a longer wiping action.

**Special**—RF coaxial contacts, size 16 taper pins, and thermocouple contacts can be ordered in place of standard contacts in MS connectors.

BNC Series coaxial contacts with insulators have been developed for use as replacements for O size contacts. Having 50 ohm impedance, they are for use

with RG-55, 58, 58 A/U coaxial cables at peak voltages to 500 volts and up to 10,000 megacycles frequency. These coaxial contacts (31-117 female jack assembly and 31-116 male plug assembly) are manufactured by FXR, a division of AMPHENOL-BORG Electronics, Danbury, Conn., and should be ordered from FXR.

AMPHENOL taper pin contacts are designed for use with taper pin wire terminals. They can be ordered in any MS connector using size 16 contacts by adding (432) to the standard part number and changing the "MS" prefix to "97". Taper pin contacts are not available in contact sizes larger than 16.

Standard MS thermocouple inserts are listed in this catalog, all using Iron-Constantan combinations. In addition, AMPHENOL offers a larger number of inserts using all combinations of Alumel, Chromel, Constantan, Copper, and Iron.

***For other military connectors (compatible with MS types):***

**Check indexes, pages 1, 2, 3**

**See catalog pages 77 to 96**

# HOW TO SELECT MS CONNECTORS

## 1

### DETERMINE SHELL STYLE AND CONSTRUCTION

Quite a number of shell types are available for MS connectors: split or solid shells, threaded or quick disconnect coupling, and various geometries suited to wall, box, or cable mounting, and to angular or close-quarter usages. The application determines whether the plug or receptacle is on the live side of the circuit; that is, which requires socket contacts.

Find the desired shell style and construction in the index and check dimensions and other detailed information on the pages indicated to make sure it meets your specific requirements.

## 2

### DETERMINE THE PROPER INSERT

Complete insert specifications and the various shell styles in which each insert is available are listed in the MS Connector Availability table, pages 24-61. This table also shows the service rating and configuration of each insert and the alternate positions available for it. Refer to this table to make sure the selected insert meets the requirements of your application.

In this table, inserts are grouped according to their number of contacts; within each group, the inserts are listed in numerical sequence. If you know the shell size or insert number but do not know the number of contacts, check the insert index on page 62. In that index, inserts are listed in numerical sequence by shell size. For each, the number of contacts is given together with the page of the MS Connector Availability table on which it is listed.

## 3

### DETERMINE THE PART NUMBER TO ORDER

The complete part number is a composite of the shell number, the insert number, and a suffix to denote pin or socket contacts. An additional suffix may be required for deviation from standard in finish, type of contacts desired, or for any other reason. For complete information on how to put together the desired part number, see the facing page.

*For fast service, call or wire your order to the nearest Amphenol Sales Office. Names and addresses are on the back cover of the catalog.*



# HOW TO ORDER MS CONNECTORS

For the vast majority of MS connectors you want, you will find the complete part number right in the MS Connector Availability table when you check the specifications as per step 2 on the facing page.

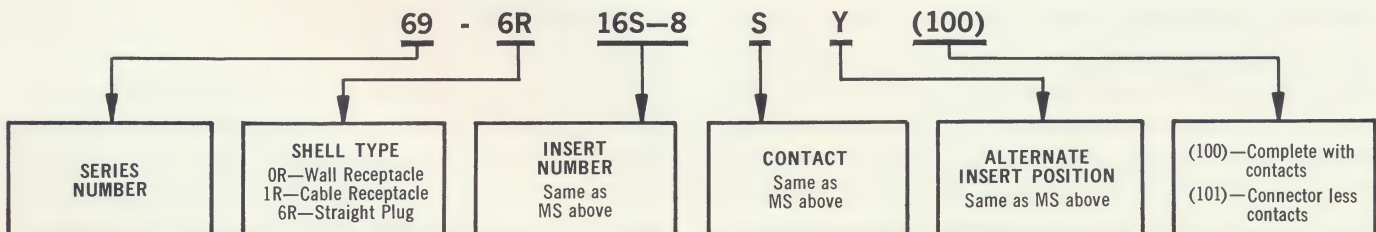
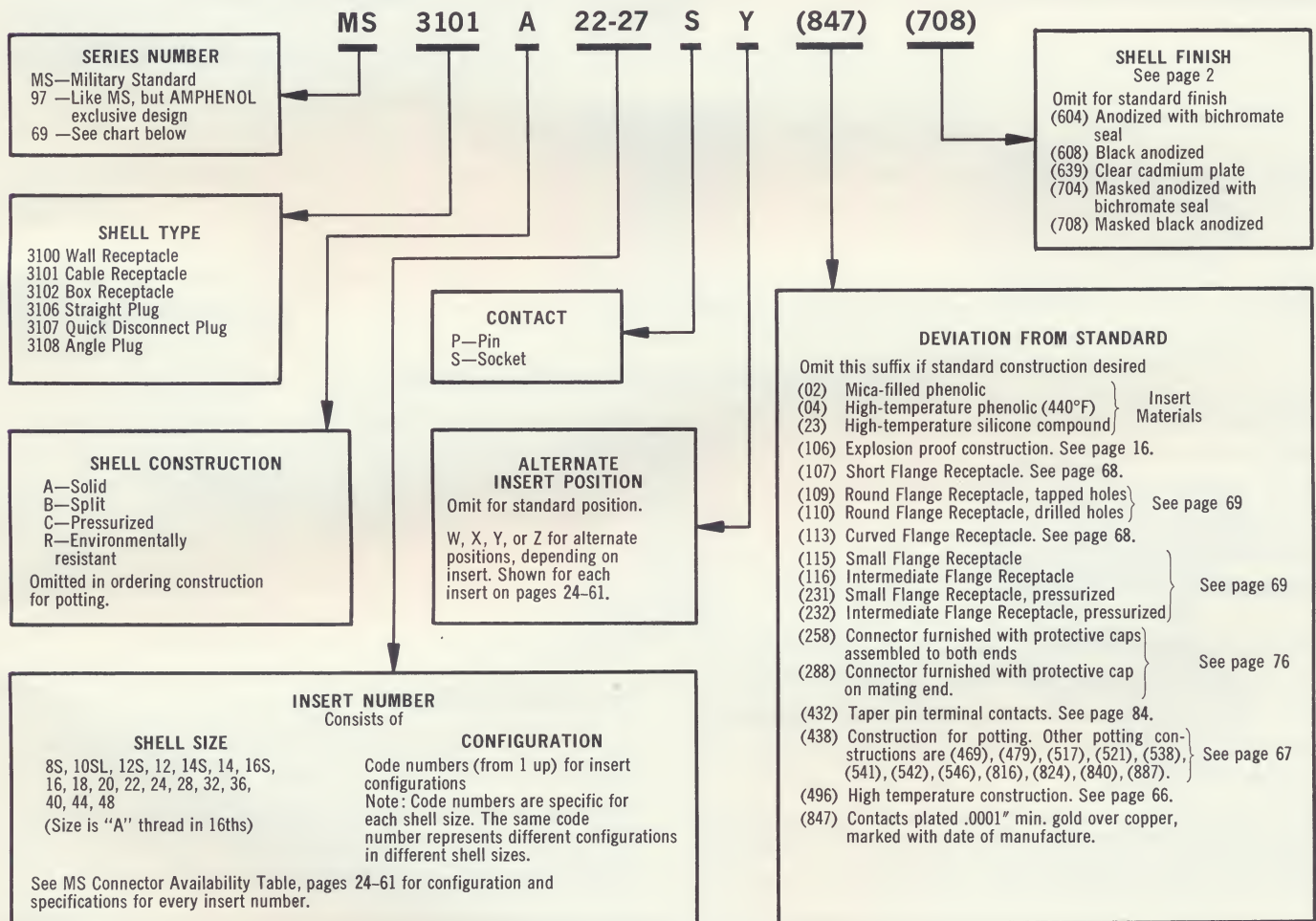
Assume, for example, that you want an environmentally resistant straight plug with 35 socket contacts. You would check the table and find, on page 59, that three different environmentally resistant straight plug combinations are available with 35 socket contacts: MS3106R with a 28-15S insert, MS3106R with a 32-7S insert, and 69-6R with a 32-7S insert. You would pick the combination best suited to your requirements and order that combination of numbers: MS3106R 28-15S, MS3106R 32-7S, or 69-6R 32-7S(100).

However, the MS Connector Availability table does not give the part number suffixes for deviations from

standard, such as special shell finishes, insert materials, contact plating, and so on. You can get these suffixes from the table below, which shows how the codes for the many connector variations are combined into the part number.

**EXAMPLE:** To get a straight plug with 35 contacts in a size 28 shell with black anodized finish and contacts to accept taper pins, order 97-3106A 28-15S(432)(608).

Note the page references in the table. If you wish a deviation from standard, check the pages referenced to find the details of that deviation and the connector types for which it is available. For information on connector types not shown on this table, check the indexes on pages 1, 2, and 3.

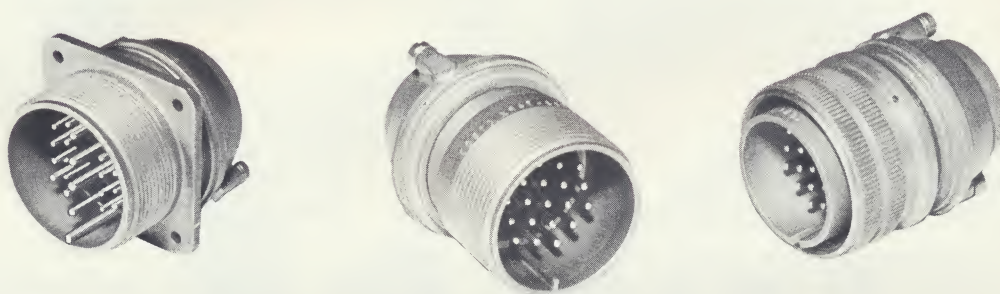


**69 Series—R-Type with Poke Home® Contacts**

*Exclusive AMPHENOL design—interchangeable with standard MS types*

**THE IDEAL CONNECTOR FOR MIL-C-5015 REQUIREMENTS**

All the lightweight, environmental-resistant features of MIL-C-5015, Class R, *plus* the exceptional versatility of Poke Home contacts and superior environmental performance put AMPHENOL 69 Series connectors far ahead of all others in their class.

**Quick, Reliable, Versatile Poke Home Contacts**

With AMPHENOL-developed Poke Home contacts, assembly is simple, quick, and reliable—up to 4 times as fast as soldering with far more consistent reliability. (See opposite page.) Connector installation is far easier, too, especially in tight spots, because contact terminations can be made where convenient, then the wired contacts inserted in the connector. Circuit rearrangement or repair is exceptionally convenient because only contacts affected need to be removed—not the connector. And all that is needed for removal and insertion is a simple tool.

**Outstanding Environmental Resistance**

**Altitude-Immersion**—69 Series connectors surpass requirements of MIL-C-5015. After being entirely immersed in water and altitude-cycled to 70,000 feet for 30 minutes, they meet MIL-C-5015 dielectric withstanding voltages while still in water, and have a minimum insulation resistance of 100 megohms.

**Moisture Resistance**—Under 20-day moisture condensation testing per Class "R" procedure of MIL-C-5015, 69 Series connectors meet every test requirement; insulation resistance at conclusion of test is 100 megohms minimum.

**Corrosion Resistance**—Resistant to Salt spray per MIL-STD-202, Method 101, Condition B.

**Sand and Dust Resistance**—69 Series connectors perform reliably after exposure to sand and dust velocities of 200 feet per minute for 6 hours per MIL-E-5772, Condition B.

**Fluid Immersion**—Unmated 69 Series connectors meet all MIL-C-5015 requirements after immersion in hydraulic fluid and aviation oil for 20 hours.

**All-Around Reliability**

In all other mechanical and electrical features such as durability, resistance to shock and vibration, temperature range, voltage ratings, insulation resistance and other requirements, 69 Series connectors fully conform to the "R" requirements of MIL-C-5015.

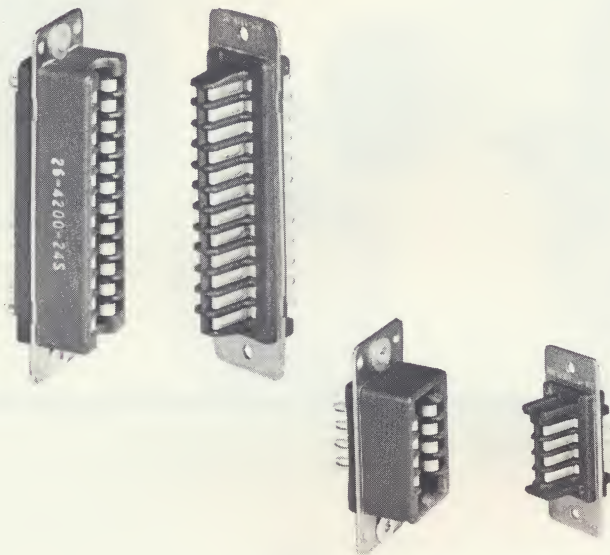
**Application Flexibility**

69 Series connectors come in three shell types—wall receptacles (MS3100 type), cable receptacles (MS3101 type), and straight plugs (MS3106 type)—to meet various application requirements. They accept a large variety of inserts and they meet the dimensional requirements of MIL-C-5015. They take such standard accessories as

caps and chains, dummy receptacles and protective caps.

The shell types available in the 69 Series, their dimensions, accessory tools, and other pertinent data are on pages 12, 13, 14, 15, 18, and 19. The many different inserts they accept are listed in the MS Connector Availability table, pages 24-61.



**Blue Ribbon 26 Series***Ribbon principle eliminates problems of bent contacts—No visual alignment needed***Barrier Polarization Type Without Shells****ORDERING INFORMATION**

Plugs	Contacts	Mating Receptacles
26-182	8	26-183
26-4100-8P	8	26-4200-8S
26-4100-16P	16	26-4200-16S
26-4100-24P	24	26-4200-24S
26-4100-32P	32	26-4200-32S

Voltage Rating: 5 AMPS { 800 Volts D.C. at Sea Level  
300 Volts D.C. at 70,000 Feet Altitude

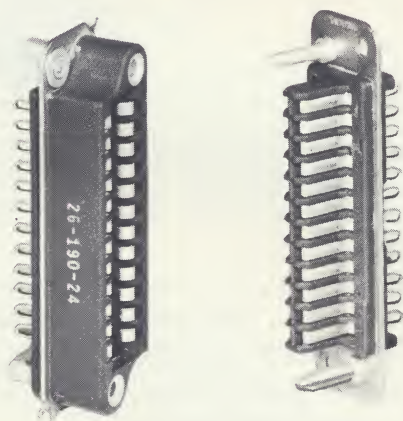
Sturdy yet compact and lightweight, the barrier polarized 26 series of plugs and receptacles provides efficient interconnection for complex rack and panel configurations, as well as for small assemblies. Multiple mounting of a number of connectors on a single frame permits the simultaneous make or break of any number of circuits. Circuit switching or re-routing is easily accomplished by proper wiring of plug.

Positive, easy mating is assured by the interlocking design. Polarization does not depend on contact arrangement, and visual alignment is unnecessary. Insertion is further aided by the Blue Ribbon Contacts, which cannot be bent in mating, and by the float-mounted receptacle.

Receptacles have molded-in, corrosion resistant, passivated stainless steel mounting plates for secure installation. Connector bodies are rectangular, for simplicity of layout.

Plugs have male inserts and receptacles have female inserts.

NOTE: 26-4200 and 26-4100 connectors are also furnished with mounting plates having a gold iridescent iridite finish (over cadmium-plated stainless steel), per MIL-E-5400 Specification. To order, substitute a 5 for the 4 in the part number (26-5200 and 26-5100). Another 26-4200 and 26-4100 style offers taper pin adapters for the contact tails. To get these, substitute a 6 for the 4 in the part number (26-6200 and 26-6100).

**Pin Polarization Type Without Shells**

26 series pin polarized plugs and receptacles are similar in construction to the barrier type but are designed to withstand increased vibration and impact forces. This feature, together with their light weight and compactness, make these connectors ideal for airborne or mobile applications.

Positive contact is assured by the dual purpose polarizing pins, which also permit easy plug-in without danger of mismatching or need for visual alignment.

Receptacles are female and plugs are male.

**ORDERING INFORMATION**

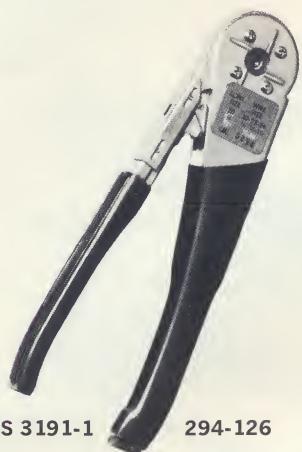
Plugs	Contacts	Mating Receptacles
26-159-16	16	26-190-16
26-159-24	24	26-190-24
26-159-32	32	26-190-32

Voltage Rating: 5 AMPS { 750 Volts D.C. at Sea Level  
300 Volts D.C. at 60,000 Feet Altitude



# POKE HOME CONTACT CRIMPING

For High Speed and Consistent Reliability



MS 3191-1

294-126

Soldering is fine . . . *when everything is just right*. If the soldering iron temperature is right, the solder composition proper, the flux correct, and all soldering points clean, a well trained operator can make about 200 soldered terminations an hour.

If any of these go wrong, speed goes down and rejects go up. What's worse, a bad job (for example, a cold solder joint) may go undetected, and equipment may fail at a critical time. You can never be completely sure, because you can't tell the quality of the soldered joint by inspection.

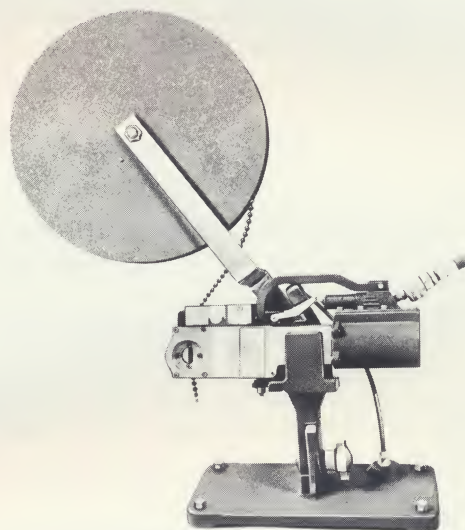
Crimping is a sure thing. With less than an hour's training, a new operator can produce a steady flow of good, reliable terminations. In practically no time, he can build up to a speed of 400 terminations an hour with a hand tool and 600-800 an hour with a pneumatic tool.

You can be sure these terminations are good, because you can check the tool setting and know it will continue to be good . . . crimp after crimp after crimp.

## HOW POKE HOME CRIMPING ASSURES TOP EFFICIENCY



294-605



294-506

**Speed**—Crimping is a fast 1-2-3 process: insert contact, insert wire, close tool—and the contact termination is complete. That's why the hand tool gives up to 400 terminations an hour. Pneumatically-operated tools, with cartridge or reel-fed contacts, eliminate the contact insertion step and increase the yield to 600-800 terminations per hour.

**Consistent Quality**—The preset crimping tool automatically controls crimp depth and eliminates the possibility of over-crimping or under-crimping.

**Dependable Inspection**—Once the crimping tool is inspected for proper setting, it consistently provides identical production terminations. Visual inspection through the contact inspection hole immediately verifies proper wire insertion.

**High Holding Power**—AMPHENOL's four-indent crimp provides such excellent wire confinement that high pull-out forces exceed the minimum wire-breaking strength before they pull the wire out of the contact.

**Easy Termination Accessibility**—Problems of closely spaced contacts and close quarters are minimized, because contacts can be crimped to leads, *then* inserted in connectors. Explosive atmosphere and lack of electric power—bugaboos of soldering—are no problems, because the hand tool needs no power and creates no hazard.

**Minimum Termination Resistance**—Resistance across a crimp termination is less than that at a soldered termination—so low that it's not measureable with normal instruments.

**High Temperature Range**—Crimp terminations can be used in high-temperature applications where solder might soften or melt.

**Minimum Operator Training**—It takes only a few minutes to show the simple steps to a new operator and make sure he can do the job.



## Simple Crimping Procedures Assure Efficiency

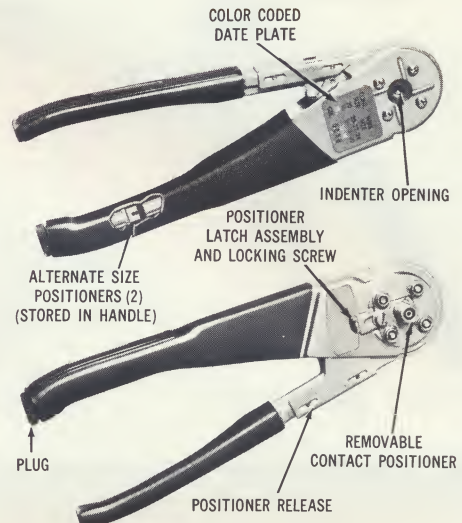
### HOW TO USE MS3191-1 HAND CRIMPING TOOL

#### Setting Up Tool

1. Put tool in "open" position by squeezing handles to their maximum position to trip ratchet, then releasing them.
2. Loosen latch locking screw and pull latch to "open" position.
3. Pull positioner release all the way down against force of spring and insert or remove positioner.
4. Select proper positioner for contact size. Positioners are color coded and stamped for size. Be sure flat on flange mates with the flat in handle. Positioner flange must be flush with handle before positioner latch assembly and locking screw can be fully closed and locked.
5. After positioner is in place, push latch to closed position and tighten latch locking screw. Tool is now ready to crimp.

#### Crimping

1. Insert prepared contact and wire through the indenter opening into positioner.
2. Squeeze handles together until positive stop is reached. Tool will then release and return to fully "open" position. Remove crimped contact and wire.



*Procedures for the other crimping tools are similar. See applicable manual.*

### INSERT OR REMOVE INDIVIDUAL CONTACTS AT WILL

#### Insertion

1. Cradle the crimp end of contact in round end of tool, making sure tip of tool rests against contact shoulder at base of crimp.
2. Carefully direct mating end of contact into appropriate wire hole in grommet assembly.
3. Push contact into grommet assembly until contact is seated with a positive stop. When shoulder on insertion bit reaches grommet face, insertion is complete.
4. Withdraw tool, keeping it at right angles to grommet face during withdrawal.
5. Screw grommet nut tight to the proper torque value.

#### Removal

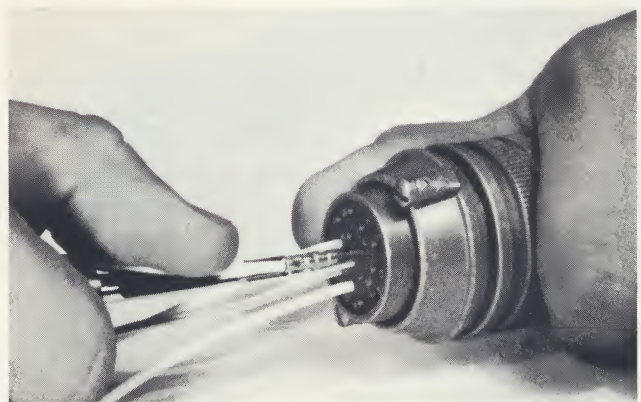
1. Loosen grommet nut but do not remove it from connector.
2. Select proper removal tool for size of contact.
3. Insert bit (into mating end of female contacts, over mating end of male contacts) and push the contact out.



REMOVING CONTACT



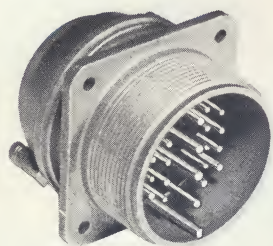
CRADLING CONTACT IN TOOL



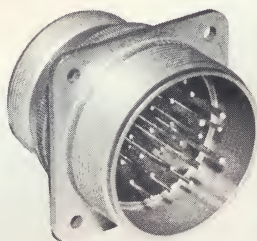
INSERTING CONTACT



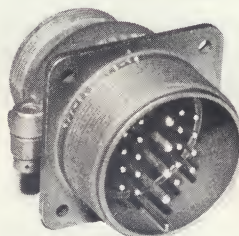
## Wall Mounting Receptacles



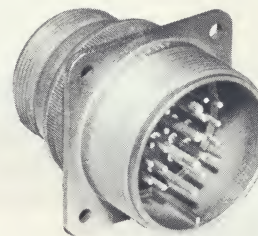
MS 3100 E & R  
Environmental Resistant



MS 3100 A  
Solid Shell

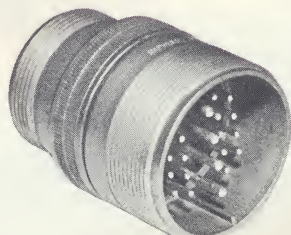


MS 3100 B  
Split Shell

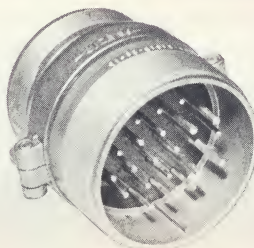


MS 3100 C  
Pressurized

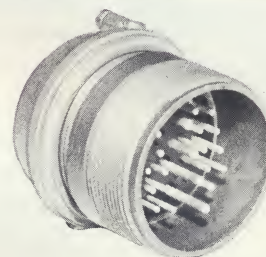
## Cable Receptacles



MS 3101 A  
Solid Shell

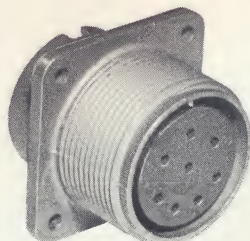


MS 3101 B  
Split Shell

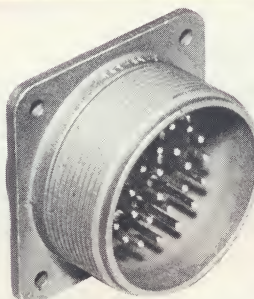


MS 3101 E & R  
Environmental Resistant

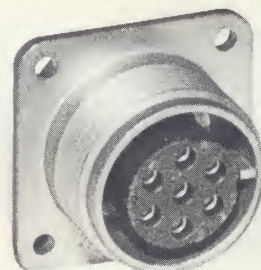
## Box Mounting Receptacles



MS 3102 A  
Solid Shell

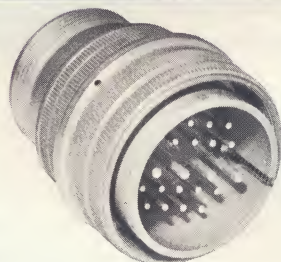


MS 3102 C  
Pressurized

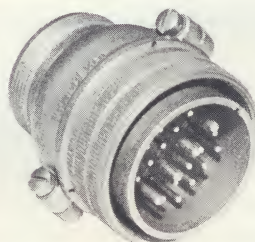


MS 3102 E & R  
Environmental Resistant

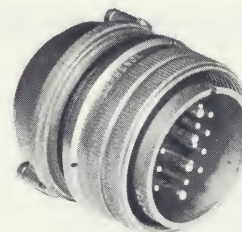
## Straight Plugs



MS 3106 A  
Solid Shell

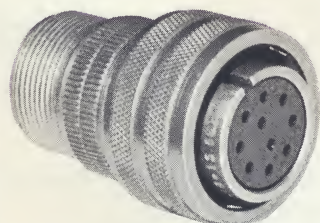


MS 3106 B  
Split Shell

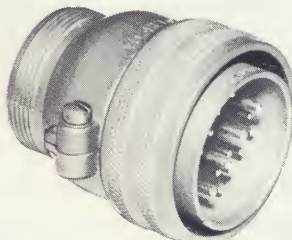


MS 3106 E & R  
Environmental Resistant

## Quick Disconnect Plugs

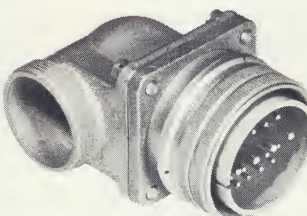


MS 3107 A  
Solid Shell

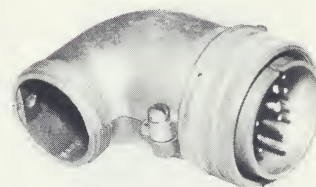


MS 3107 B  
Split Shell

## Angle Plugs



MS 3108 A  
Solid Shell



MS 3108 B  
Split Shell

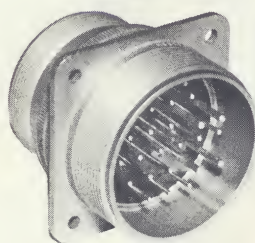


# MS CONNECTOR SHELL TYPES

## Wall Mounting Receptacles

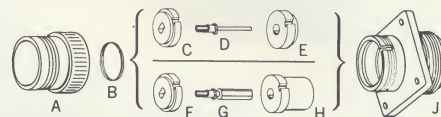
For wall or bulkhead use— Eliminate need for conduit box

Meet or exceed standard performance requirements of military specification MIL-C-5015.



### MS 3100A—Solid Shell

Solid shell construction is strong, conserves space, and provides weather protection. Front shell is die cast with integral polarizing key; back shell is threaded for fittings.



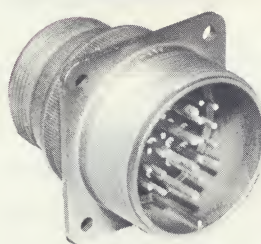
#### WITH PIN INSERT (Male)

- A Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell

#### WITH SOCKET INSERT (Female)

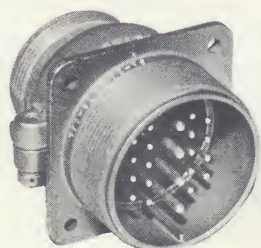
- A Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell

Above is for MS 3100A. MS 3100C incorporates resilient sealing gasket between inserts unless pins are molded into insert.



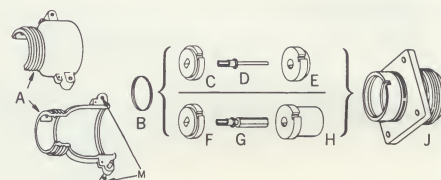
### MS 3100C—Pressurized

Provides a pressure-tight, moisture-resistant feed-through for electrical circuits in such applications as high altitude aircraft. All female inserts are of 2-piece (407) construction. Unless indicated otherwise in Availability Table, male inserts are of 1-piece (404) construction. For construction information, see page 4.



### 97-3100B—Split Shell

For applications where a prime requisite is convenience in soldering and inspection of wiring. One or both halves of back shell may be removed by loosening the captive assembly screws. NOTE: The 97-3100B connector is no longer carried in stock, but is available on special order. Consult factory for pricing and delivery.

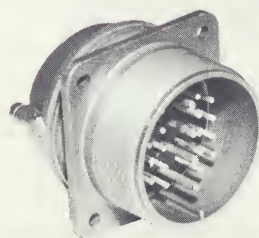


#### WITH PIN INSERT (Male)

- A Split Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- M Screws

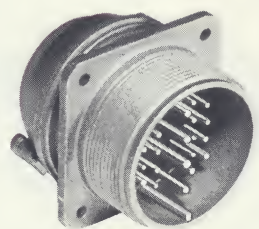
#### WITH SOCKET INSERT (Female)

- A Split Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- M Screws



### MS 3100R—Environmental Resistant

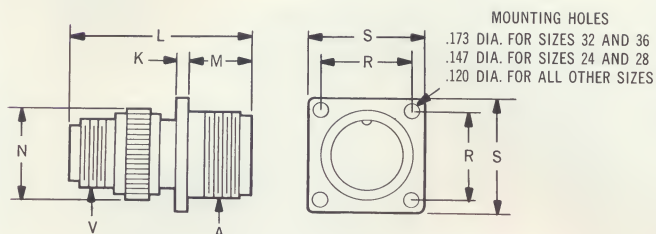
Ideal for equipment requiring sealed constructions. Meets or exceeds both the "E" and "R" requirements of MIL-C-5015. Unitized grommet design eliminates need for a bulky cable clamp and minimizes connector length and weight. Factory assembles grommet, compression nut and ring into single unit and also preassembles and bonds contacts and resilient rubber inserts into the shell. Only two parts remain to be handled in assembly.



### 69-0R—R-Type, Poke Home® Contacts

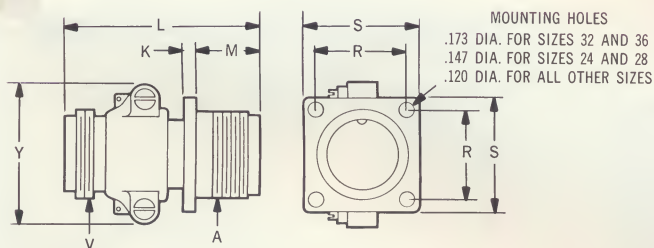
Environmental resistant connector, interchangeable with standard MS types but offering improved "R" performance over MIL-C-5015. Provides added advantages of Poke Home contacts which are crimped to wire leads, then inserted into connector. They can be relocated or replaced at any time. 69-0R Connectors withstand altitude-immersion cycling to 70,000 feet for 30 minutes, have minimum insulation resistance of 100 megohms after cycling per AMPHENOL Specification 9717-122. (See page 7 for ordering information.)

## MS 3100A and MS 3100C



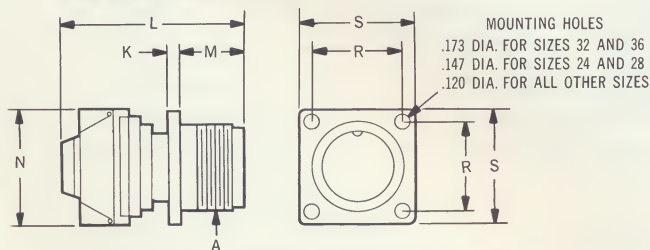
Connector Size	Dimensions—Inches							
	A Coupling Threads	K	L	M	N	R	S	V Fitting Threads
8S	1/2-28	5/64	1 1/4	9/16	17/32	19/32	7/8	1/2-28
10S	5/8-24	5/64	1 5/16	9/16	5/8	23/32	1	1/2-28
10SL	5/8-24	5/64	1 9/32	9/16	5/8	23/32	1	5/8-24
12S	3/4-20	5/64	1 15/32	9/16	29/32	1 1/16	1 3/32	5/8-24
12	3/4-20	5/64	1 27/32	3/4	29/32	1 1/16	1 3/32	5/8-24
14S	7/8-20	5/64	1 7/16	9/16	7/8	29/32	1 1/16	3/4-20
14	7/8-20	5/64	1 27/32	3/4	7/8	29/32	1 1/16	3/4-20
16S	1-20	5/64	1 31/64	9/16	1	31/32	1 9/32	7/8-20
16	1-20	1/8	1 57/64	3/4	1	31/32	1 9/32	7/8-20
18	1 1/8-18	1/8	2	3/4	1 1/8	1 1/16	1 3/8	1-20
20	1 1/4-18	1/8	2 1/8	3/4	1 1/4	1 5/32	1 1/2	1 3/16-18
22	1 3/8-18	1/8	2 1/8	3/4	1 3/8	1 1/4	1 5/8	1 3/16-18
24	1 1/2-18	1/8	2 1/4	1 3/16	1 1/2	1 3/8	1 3/4	1 7/16-18
28	1 3/4-18	1/8	2 1/4	1 3/16	1 3/4	1 9/16	2	1 7/16-18
32	2-18	1/8	2 3/8	7/8	2 1/32	1 3/4	2 1/4	1 3/4-18
36	2 1/4-16	1/8	2 3/8	7/8	2 1/4	1 15/16	2 1/2	2-18

## 97-3100B



Connector Size	Dimensions—Inches							
	A Coupling Threads	K	L	M	R	S	V Fitting Threads	Y
14S	7/8-20	5/64	1 43/64	9/16	29/32	1 3/16	3/4-20	1 5/32
16S	1-20	5/64	1 47/64	9/16	31/32	1 9/32	7/8-20	1 1/4
18	1 1/8-18	1/8	2 1/16	3/4	1 1/16	1 3/8	1-20	1 41/64
20	1 1/4-18	1/8	2 1/8	3/4	1 5/32	1 1/2	1 3/16-18	1 13/16
22	1 3/8-18	1/8	2 1/8	3/4	1 1/4	1 5/8	1 3/16-18	1 19/16
24	1 1/2-18	1/8	2 9/32	1 3/16	1 3/8	1 3/4	1 7/16-18	2 1/16
28	1 3/4-18	1/8	2 9/32	1 3/16	1 9/16	2	1 7/16-18	2 5/16
32	2-18	1/8	2 21/64	7/8	1 3/4	2 1/4	1 3/4-18	2 19/32
36	2 1/4-16	1/8	2 21/64	7/8	1 15/16	2 1/2	2-18	2 27/32

## MS 3100R and 69-OR



### ACCESSORY TOOLS for 69-OR

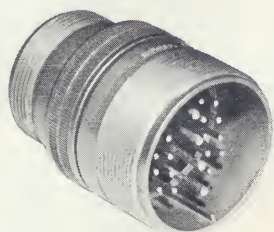
Part No.	Description
294-126	MS3191-1 Univ. Crimp Tool
294-57	Universal Crimp Tool
294-85	#16 Contact Crimp Tool
294-86	#12 Contact Crimp Tool
294-39	#16 Contact Insertion & Removal Tool
294-40	#12 Contact Insertion & Removal Tool

Connector Size	Dimensions—Inches							
	A Coupling Threads	K	L MS 3100R	L 69-OR	M	N	R	S
8S	1/2-28	5/64	1 37/64		9/16	5 3/64	19/32	7/8
10S	5/8-24	5/64	1 37/64		9/16	29/32	2 3/32	1
10SL	5/8-24	5/64	1 37/64	1 45/64	9/16	1 1/32	2 3/32	1
12S	3/4-20	5/64	1 37/64	1 45/64	9/16	1 5/64	1 3/16	1 3/32
14S	7/8-20	5/64	1 37/64	1 45/64	9/16	1 5/64	29/32	1 3/16
16S	1-20	5/64	1 37/64	1 45/64	9/16	1 7/64	31/32	1 9/32
16	1-20	5/64	1 29/32	2 1/32	3/4	1 7/64	31/32	1 9/32
18	1 1/8-18	1/8	1 29/32	2 1/32	3/4	1 25/64	1 1/16	1 3/8
20	1 1/4-18	1/8	1 29/32	2 1/32	3/4	1 9/16	1 5/32	1 1/2
22	1 3/8-18	1/8	1 29/32	2 1/32	3/4	1 39/64	1 1/4	1 5/8
24	1 1/2-18	1/8	1 29/32	2 1/32	1 3/16	1 25/32	1 3/8	1 3/4
28	1 3/4-18	1/8	1 29/32	2 1/32	1 3/16	2 1/16	1 9/16	2
32	2-18	1/8	1 29/32	2 1/32	7/8	2 1/4	1 3/4	2 1/4
36	2 1/4-16	1/8	1 29/32	2 1/32	7/8	2 13/32	1 15/16	2 1/2

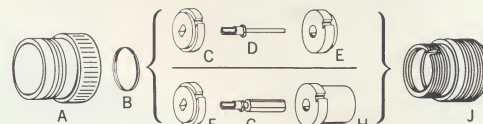


**Cable Receptacles***Provides connection in cable or conduit*

Meet or exceed standard performance requirements of military specification MIL-C-5015.

**MS 3101A—Solid Shell**

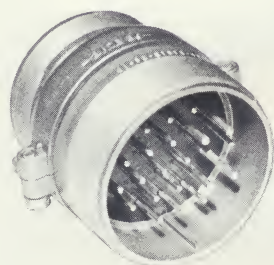
Solid shell construction is strong, conserves space, and provides weather protection. One-piece die cast front shell contains a polarizing key. Machined back shell is threaded for standard fittings and can be unscrewed for soldering connections or inspecting wires.

**WITH PIN INSERT (Male)**

- A Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell

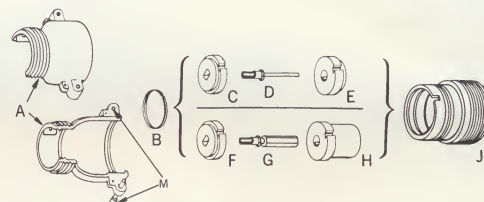
**WITH SOCKET INSERT (Female)**

- A Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell

**97-3101B—Split Shell**

Normally used with straight plug MS 3106B for cable to cable connections where maximum accessibility to soldered connections is of prime importance. One or both halves of back shell may be removed by loosening captive screws.

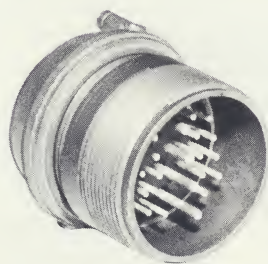
NOTE: The 97-3101B connector is no longer carried in stock, but is available on special order. Consult factory for pricing and delivery.

**WITH PIN INSERT (Male)**

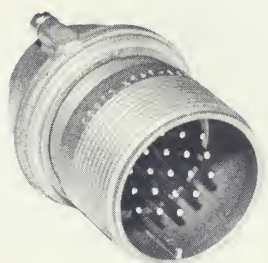
- A Split Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- M Screws

**WITH SOCKET INSERT (Female)**

- A Split Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- M Screws

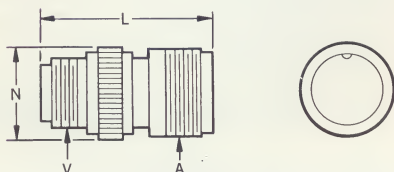
**MS 3101R—Environmental Resistant**

Fulfills requirements of aircraft and missile use as well as applications calling for sealed components. Meets or exceeds both the "E" and "R" requirements of MIL-C-5015. Its cartridge construction means that only two pieces have to be handled in assembly. The contacts and resilient rubber insert are already preassembled and bonded into the shell. Also, the grommet, compression nut, and ring are assembled into a single unit at the factory.

**69-1R—R-Type, Poke Home® Contacts**

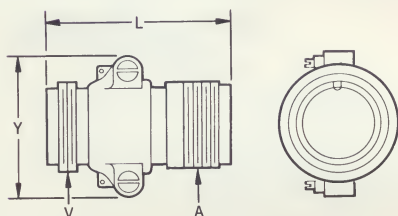
Environmental resistant connector, interchangeable with standard MS types but offering improved "R" performance over MIL-C-5015. Provides added advantages of Poke Home contacts which are crimped to wire leads automatically, then inserted into connector. They can be relocated or replaced at any time. 69-1R Connectors withstand altitude-immersion cycling to 70,000 feet for 30 minutes, have minimum insulation resistance of 100 megohms after cycling per AMPHENOL Specification 9717-122. (See page 7 for ordering information.)

### MS 3101A



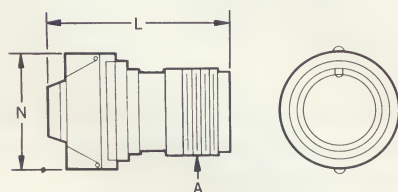
Connector Size	A Coupling Threads	Dimensions—Inches		
		L	N	V Fitting Threads
8S	1/2-28	1 1/4	1 7/32	1/2 -28
10S	5/8-24	1 5/16	5/8	1/2 -28
10SL	5/8-24	1 9/32	5/8	5/8 -24
12S	3/4-20	1 15/32	25/32	5/8 -24
12	3/4-20	1 27/32	25/32	5/8 -24
14S	7/8-20	1 7/16	7/8	3/4 -20
14	7/8-20	1 27/32	7/8	3/4 -20
16S	1 -20	1 31/64	1	7/8 -20
16	1 -20	1 57/64	1	7/8 -20
18	1 1/8-18	2	1 1/8	1 -20
20	1 1/4-18	2 1/8	1 1/4	1 3/16-18
22	1 3/8-18	2 1/8	1 3/8	1 3/16-18
24	1 1/2-18	2 1/4	1 1/2	1 7/16-18
28	1 3/4-18	2 1/4	1 3/4	1 7/16-18
32	2 -18	2 3/8	2 1/32	1 3/4 -18
36	2 1/4-16	2 3/8	2 1/4	2 -18

### 97-3101B



Connector Size	A Coupling Threads	Dimensions—Inches		
		L	V Fitting Threads	Y
14S	7/8-20	1 43/64	3/4 -20	1 5/32
16S	1 -20	1 47/64	7/8 -20	1 1/4
18	1 1/8-18	2 1/16	1 -20	1 41/64
20	1 1/4-18	2 1/8	1 3/16-18	1 13/16
22	1 3/8-18	2 1/8	1 3/16-18	1 15/16
24	1 1/2-18	2 9/32	1 7/16-18	2 1/16
28	1 3/4-18	2 9/32	1 7/16-18	2 5/16
32	2 -18	1 5/16	1 3/4 -18	1 19/32
36	2 1/4-16	2 11/32	2 -18	2 27/32

### MS 3101R and 69-1R



Connector Size	A Coupling Threads	Dimensions—Inches		
		L MS 3101R	L 69-1R	N
8S	1/2-28	1 37/64		53/64
10S	5/8-24	1 37/64		29/32
10SL	5/8-24	1 37/64	1 45/64	1 1/32
12S	3/4-20	1 37/64	1 45/64	15/64
14S	7/8-20	1 37/64	1 45/64	19/64
16S	1 -20	1 37/64	1 45/64	1 17/64
16	1 -20	1 29/32	2 1/32	1 17/64
18	1 1/8-18	1 29/32	2 1/32	1 25/64
20	1 1/4-18	1 29/32	2 1/32	19/16
22	1 3/8-18	1 29/32	2 1/32	1 39/64
24	1 1/2-18	1 29/32	2 1/32	1 25/32
28	1 3/4-18	1 29/32	2 1/32	2 1/16
32	2 -18	1 29/32	2 1/32	2 1/4
36	2 1/4-16	1 29/32	2 1/32	2 13/32

#### ACCESSORY TOOLS for 69-1R

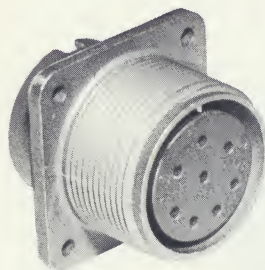
Part No.	Description
294-126	MS3191-1 Univ. Crimp Tool
294-57	Universal Crimp Tool
294-85	#16 Contact Crimp Tool
294-86	#12 Contact Crimp Tool
294-39	#16 Contact Insertion & Removal Tool
294-40	#12 Contact Insertion & Removal Tool



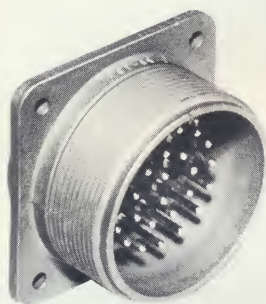
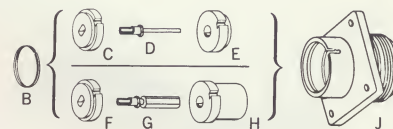
**Box Receptacles**

Mount directly on equipment, chassis, or panel—Designed for open type wiring

Meet or exceed standard performance requirements of military specification MIL-C-5015.

**MS 3102A—Solid Shell**

One-piece aluminum die cast shell contains an internal polarizing key for mating with polarizing slot in plug front shell.

**MS 3102C—Pressurized**

Provides a pressure-tight, moisture-resistant feed-through for electrical circuits in such applications as high altitude aircraft. All female inserts are of 2-piece (407) construction. Unless indicated otherwise in Availability Table, male inserts are of 1-piece (404) construction. For construction information, see page 4.

**WITH PIN INSERT (Male)**

B Retainer Ring  
C Pin Rear Insert  
D Pin Contact  
E Pin Front Insert  
J Front Shell

**WITH SOCKET INSERT (Female)**

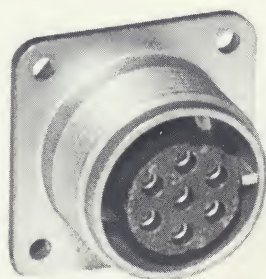
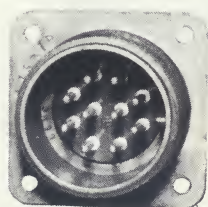
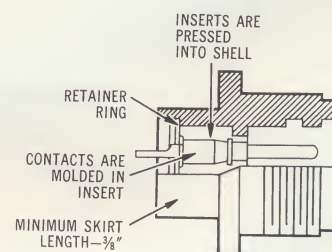
B Retainer Ring  
F Socket Rear Insert  
G Socket Contact  
H Socket Front Insert  
J Front Shell

Above is for MS 3102A. MS 3102C incorporates resilient sealing gasket between inserts unless pins are molded into insert.

**97-3102 (106)—Explosion Proof**

Exclusive AMPHENOL design. Exceeds requirements of Underwriters' Laboratories in that there is no clearance at all between contacts and insulation because contacts are molded in the one-piece insert. There is no clearance between insert and connector shell because inserts are press fit in the shells. The back diameter of the shell is machined after plating to a tolerance of .001" for a maximum length of  $\frac{3}{8}$ ". Available with pin, or male, contacts only.

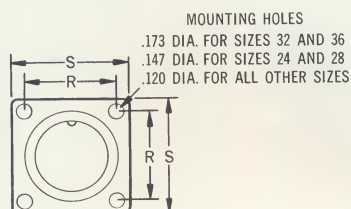
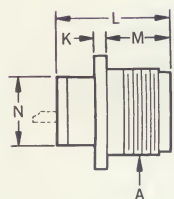
NOTE: For ordering, the suffix (106) must appear at the end of the part number; for example 97-3102-10S-2P(106).

**MS 3102R—Environmental Resistant**

Completely preassembled at factory, so there are no loose parts to inventory or handle. Contacts, resilient rubber insert, and shell are bonded, making this connector superior for all applications including those calling for sealed constructions.

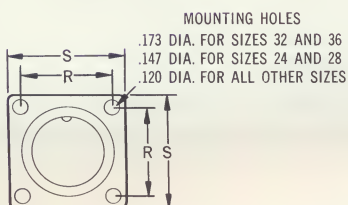
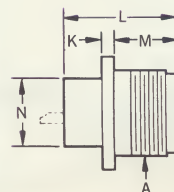
**Need a cable harness assembly?**  
**Let Amphenol experts handle it for you. See page 96.**

## MS 3102A and MS 3102C



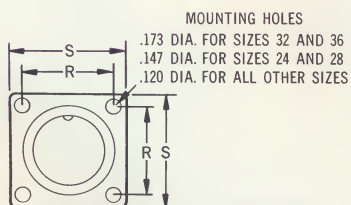
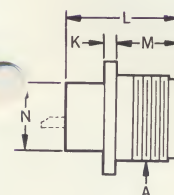
Connector Size	Coupling Threads	Dimensions—Inches						
		A	K	L	L	M	N	R S
				MS 3102A	MS 3102C			
8S	1/2—28	5/64	27/32	51/64	9/16	7/16	19/32	7/8
10S	5/8—24	5/64	27/32	51/64	9/16	1/2	23/32	1
10SL	5/8—24	5/64	27/32	27/32	35/64	5/8	23/32	1
12S	3/4—20	5/64	61/64	27/32	9/16	11/16	13/16	1 3/32
12	3/4—20	5/64	15/16	1 1/4	3/4	11/16	13/16	1 3/32
12SL	3/4—20	5/64	27/32		35/64	11/16	13/16	1 3/32
14S	7/8—20	5/64	15/16	27/32	9/16	3/4	29/32	1 3/16
14	7/8—20	5/64	15/16		3/4	3/4	29/32	1 3/16
16S	1—20	5/64	15/16	27/32	9/16	7/8	31/32	1 9/32
16	1—20	1/8	1 11/16	1 1/4	3/4	7/8	31/32	1 9/32
18	1 1/8—18	1/8	1 11/32	1 1/4	3/4	1	1 1/16	1 3/8
20	1 1/4—18	1/8	1 11/32	1 1/4	3/4	1 1/8	1 5/32	1 1/2
22	1 3/8—18	1/8	1 11/32	1 1/4	3/4	1 1/4	1 1/4	1 5/8
24	1 1/2—18	1/8	1 11/32	1 1/4	13/16	1 5/8	1 3/8	1 3/4
28	1 3/4—18	1/8	1 11/32	1 1/4	13/16	1 5/8	1 9/16	2
32	2—18	1/8	1 7/16	1 1/4	7/8	1 29/32	1 3/4	2 1/4
36	2 1/4—16	1/8	1 7/16	1 1/4	7/8	2 1/8	1 15/16	2 1/2

## 97-3102 (106)



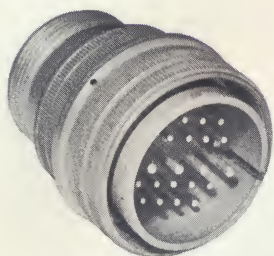
Connector Size	Coupling Threads	Dimensions—Inches						
		A	K	L	M	N	R	S
10S	5/8—24	5/64	1 1/16	35/64	.599/	.600	23/32	1
12	3/4—20	5/64	1 1/4	47/64	.664/	.665	13/16	1 3/32
14S	7/8—20	5/64	1 1/16	35/64	.734/	.735	29/32	1 3/16
14	7/8—20	5/64	1 1/4	47/64	.734/	.735	29/32	1 3/16
16S	1—20	5/64	1 5/32	9/16	.852/	.853	31/32	1 9/32
16	1—20	5/64	1 11/32	3/4	.852/	.853	31/32	1 9/32
18	1 1/8—18	1/8	1 11/32	3/4	.9765/	.9775	1 1/16	1 3/8
20	1 1/4—18	1/8	1 11/32	3/4	1.105/	1.106	1 5/32	1 1/2
22	1 3/8—18	1/8	1 11/32	3/4	1.234/	1.235	1 1/4	1 5/8
24	1 1/2—18	1/8	1 11/32	13/16	1.359/	1.360	1 3/8	1 3/4
28	1 3/4—18	1/8	1 11/32	13/16	1.600/	1.601	1 9/16	2
32	2—18	1/8	1 7/16	7/8	1.864/	1.865	1 3/4	2 1/4
36	2 1/4—16	1/8	1 7/16	7/8	2.104/	2.105	1 15/16	2 1/2

## MS 3102R



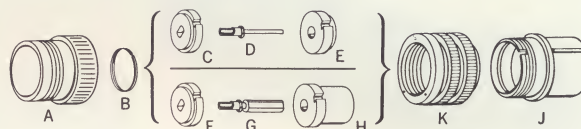
Connector Size	Coupling Threads	Dimensions—Inches						
		A	K	L	M	N	R	S
8S	1/2—28	5/64	1	9/16	7/16	19/32	7/8	
10S	5/8—24	5/64	1	9/16	1/2	23/32	1	
10SL	5/8—24	5/64	1	9/16	5/8	23/32	1	
12S	3/4—20	5/64	1	9/16	11/16	13/16	1 3/32	
14S	7/8—20	5/64	1	9/16	3/4	29/32	1 3/16	
16S	1—20	5/64	1	9/16	7/8	31/32	1 9/32	
16	1—20	5/64	1 11/32	3/4	7/8	31/32	1 9/32	
18	1 1/8—18	1/8	1 11/32	3/4	1	1 1/16	1 3/8	
20	1 1/4—18	1/8	1 11/32	3/4	1 1/8	1 5/32	1 1/2	
22	1 3/8—18	1/8	1 11/32	3/4	1 1/4	1 1/4	1 5/8	
24	1 1/2—18	1/8	1 11/32	13/16	1 5/8	1 3/8	1 3/4	
28	1 3/4—18	1/8	1 11/32	13/16	1 5/8	1 9/16	2	
32	2—18	1/8	1 11/32	7/8	1 29/32	1 3/4	2 1/4	
36	2 1/4—16	1/8	1 11/32	7/8	2 1/16	1 15/16	2 1/2	





### MS 3106A—Solid Shell

Neat, sturdy, simple to assemble. Mates with all types of MS receptacles. Front shell has a polarizing slot for engaging receptacle polarizing key. Standard fittings may be used on threaded back shell, which is removable for wiring and inspecting connections.

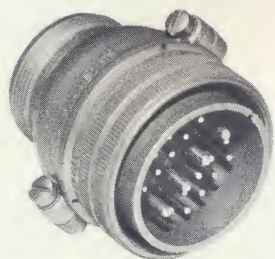


#### WITH PIN INSERT (Male)

- A Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- K Coupling Ring

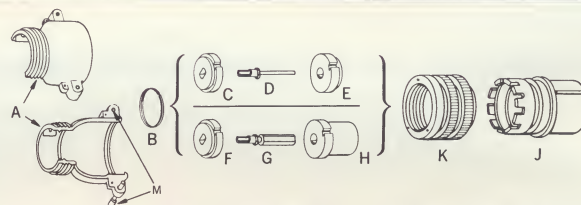
#### WITH SOCKET INSERT (Female)

- A Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- K Coupling Ring



### MS 3106B—Split Shell

For applications where soldering and inspecting connections is difficult because of cramped quarters. The back shell halves are easily removed by loosening captive assembly screws. The split back shell fits AN type fittings. The front shell is slotted for polarizing with a mating receptacle.

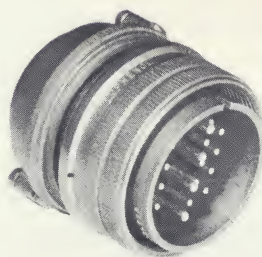


#### WITH PIN INSERT (Male)

- A Split Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- K Coupling Ring
- M Screws

#### WITH SOCKET INSERT (Female)

- A Split Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- K Coupling Ring
- M Screws

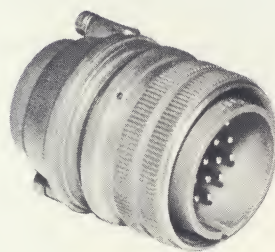


### MS 3106R—Environmental Resistant

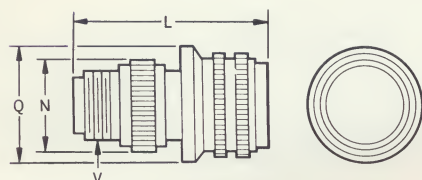
Fulfills requirements of aircraft and missile use as well as applications calling for sealed components. Meets or exceeds both the "E" and "R" requirements of MIL-C-5015. Its cartridge construction means that only three pieces have to be handled in assembly. The contacts and resilient rubber insert are already preassembled and bonded into the shell. Also, the grommet, compression nut, and ring are assembled into a single unit at the factory.

### 69-6R—R-Type, Poke Home® Contacts

Environmental resistant connector, interchangeable with standard MS types but offering improved "R" performance over MIL-C-5015. Provides added advantages of Poke Home contacts which are crimped to wire leads automatically, then inserted into connector. They can be relocated or replaced at any time. 69-6R Connectors withstand altitude-immersion cycling to 70,000 feet for 30 minutes, have minimum insulation resistance of 100 megohms after cycling per AMPHENOL Specification 9717-122. (See page 7 for ordering information.)

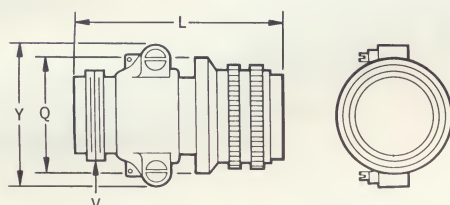


### MS 3106A



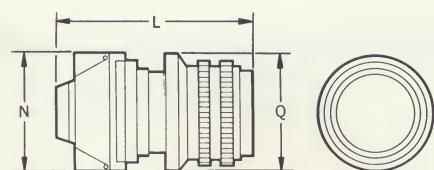
Connector Size	Dimensions—Inches			
	L	N	Q	V Fitting Threads
8S	1 1/4	17/32	3/4	1/2-28
10S	1 5/16	5/8	7/8	1/2-28
10SL	1 3/8	3/4	7/8	5/8-24
12S	1 7/16	25/32	1	5/8-24
12	1 7/8	25/32	1	5/8-24
12SL	1 31/64	7/8	1	3/4-20
14S	1 7/16	7/8	1 1/8	3/4-20
14	1 7/8	7/8	1 1/8	3/4-20
16S	1 29/64	1	1 1/4	7/8-20
16	1 57/64	1	1 1/4	7/8-20
18	2	1 1/8	1 11/32	1 -20
20	2 1/8	1 1/4	1 15/32	1 3/16-18
22	2 1/8	1 3/8	1 19/32	1 3/16-18
24	2 1/4	1 1/2	1 23/32	1 7/16-18
28	2 1/4	1 3/4	1 31/32	1 7/16-18
32	2 3/8	2 1/32	2 7/32	1 3/4 -18
36	2 3/8	2 1/4	2 15/32	2 -18

### MS 3106B



Connector Size	Dimensions—Inches			
	L	Q	V Fitting Threads	Y
14S	1 11/16	1 1/8	3/4-20	1 5/32
16S	1 11/16	1 1/4	7/8-20	1 1/4
18	2 1/16	1 11/32	1 -20	1 41/64
20	2 1/8	1 15/32	1 3/16-18	1 13/16
22	2 1/8	1 19/32	1 3/16-18	1 15/16
24	2 9/32	1 23/32	1 7/16-18	2 1/16
28	2 9/32	1 31/32	1 7/16-18	2 5/16
32	2 5/16	2 7/32	1 3/4 -18	2 19/32
36	2 11/32	2 15/32	2 -18	2 27/32

### MS 3106R and 69-6R



Connector Size	Dimensions—Inches			
	L	L	N	Q
	MS3106R	69-6R		
8S	1 37/64		53/64	3/4
10S	1 37/64		29/32	7/8
10SL	1 37/64	1 45/64	1 1/32	7/8
12S	1 37/64	1 45/64	1 5/64	1
14S	1 37/64	1 45/64	1 9/64	1 1/8
16S	1 37/64	1 45/64	1 17/64	1 1/4
16	1 29/32	2 1/32	1 17/64	1 1/4
18	1 29/32	2 1/32	1 25/64	1 11/32
20	1 29/32	2 1/32	1 9/16	1 15/32
22	1 29/32	2 1/32	1 39/64	1 19/32
24	1 29/32	2 1/32	1 25/32	1 23/32
28	1 29/32	2 1/32	2 1/16	1 31/32
32	1 29/32	2 1/32	2 1/4	2 7/32
36	1 29/32	2 1/32	2 13/32	2 15/32

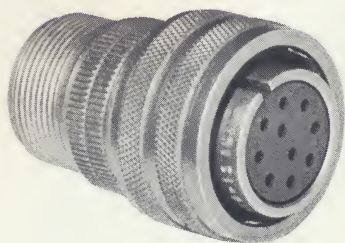
#### ACCESSORY TOOLS for 69-6R

Part No.	Description
294-126	MS3191-1 Univ. Crimp Tool
294-57	Universal Crimp Tool
294-85	#16 Contact Crimp Tool
294-86	#12 Contact Crimp Tool
294-39	#16 Contact Insertion & Removal Tool
294-40	#12 Contact Insertion & Removal Tool

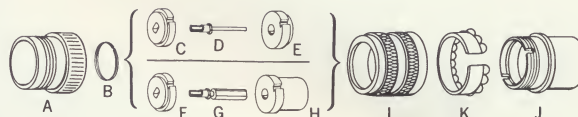


**Quick-Disconnect Plugs***Provides fast, dependable connect and disconnect*

Meet or exceed standard performance requirements of military specification MIL-C-5015.

**MS 3107A—Solid Shell**

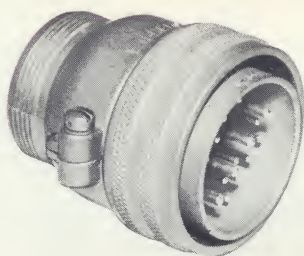
Spring action ring slips over receptacle threads quickly yet provides a high degree of retention. Front shell has polarizing slot for engaging receptacle polarizing key. Mates with all types of MS receptacles. Threaded back shell takes all standard fittings.

**WITH PIN INSERT (Male)**

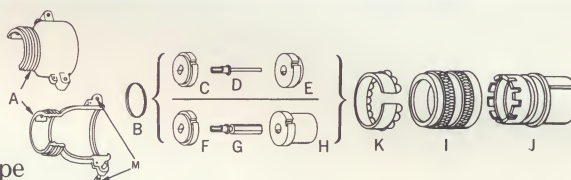
- A Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- I Coupling Ring
- J Front Shell
- K Spring Ring

**WITH SOCKET INSERT (Female)**

- A Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- I Coupling Ring
- J Front Shell
- K Spring Ring

**MS 3107B—Split Shell**

Split back shell accepts AN type fittings. Front shell mates with all types of MS receptacles. It is slotted for polarizing with a mating receptacle.

**WITH PIN INSERT (Male)**

- A Split Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- I Coupling Ring
- J Front Shell
- K Spring Ring
- M Screws

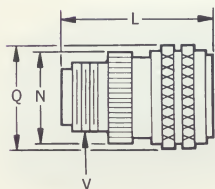
**WITH SOCKET INSERT (Female)**

- A Split Back Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- I Coupling Ring
- J Front Shell
- K Spring Ring
- M Screws

**SAVE TIME AND MONEY—CALL ON AMPHENOL**

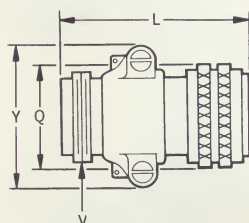
A visiting engineer recently remarked that "Other people's specials are Amphenol standards." This may not always apply, but we do make quite a few different connector designs; and often we can provide an off-the-shelf answer that's a real life saver. Sometimes there just isn't time to play around with a special design. In any event, discuss your problem with your Amphenol man. He is more up to date on new standard designs than any catalog could hope to be. And if you really must get a special in a hurry, he'll have it for you in record time. The "back yard" convenience of Amphenol Area Divisions is geared specifically to turning out specials in a hurry. Each Area Division has complete engineering and manufacturing facilities ready to go to work for you at a moment's notice.

MS 3107A

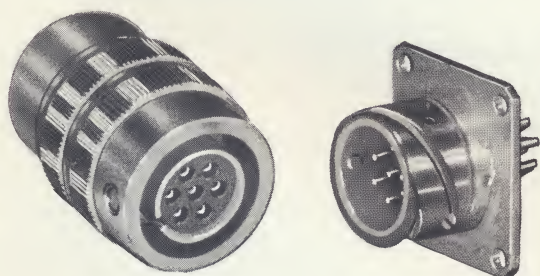


Connector Size	Dimensions—Inches			
	L	N	Q	V Fitting Threads
10S	$1\frac{5}{16}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{1}{2}$ —28
10SL	$1\frac{3}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{5}{8}$ —24
12S	$1\frac{7}{16}$	$\frac{25}{32}$	1	$\frac{5}{8}$ —24
12	$1\frac{7}{8}$	$\frac{25}{32}$	1	$\frac{5}{8}$ —24
14S	$1\frac{7}{16}$	$\frac{7}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$ —20
14	$1\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$ —20
16S	$1\frac{29}{64}$	1	$1\frac{1}{4}$	$\frac{7}{8}$ —20
16	$1\frac{57}{64}$	1	$1\frac{1}{4}$	$\frac{7}{8}$ —20
18	2	$1\frac{1}{8}$	$1\frac{11}{32}$	1 —20
20	$2\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{19}{32}$	$1\frac{3}{16}$ —18
22	$2\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{19}{32}$	$1\frac{3}{16}$ —18
24	$2\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{23}{32}$	$1\frac{7}{16}$ —18
28	$2\frac{1}{4}$	$1\frac{3}{4}$	$1\frac{31}{32}$	$1\frac{7}{16}$ —18

MS 3107B



Connector Size	Dimensions—Inches			
	L	Q	V Fitting Threads	Y
14S	$1\frac{11}{16}$	$1\frac{1}{8}$	$\frac{3}{4}$ —20	$1\frac{5}{32}$
16S	$1\frac{11}{16}$	$1\frac{1}{4}$	$\frac{7}{8}$ —20	$1\frac{1}{4}$
18	$2\frac{1}{16}$	$1\frac{11}{32}$	1 —20	$1\frac{41}{64}$
20	$2\frac{1}{8}$	$1\frac{15}{32}$	$1\frac{3}{16}$ —18	$1\frac{3}{16}$
22	$2\frac{1}{8}$	$1\frac{19}{32}$	$1\frac{3}{16}$ —18	$1\frac{15}{16}$
24	$2\frac{9}{32}$	$1\frac{23}{32}$	$1\frac{7}{16}$ —18	$2\frac{1}{16}$
28	$2\frac{9}{32}$	$1\frac{31}{32}$	$1\frac{7}{16}$ —18	$2\frac{5}{16}$



### **ADAPTATION MAY BE THE ANSWER**

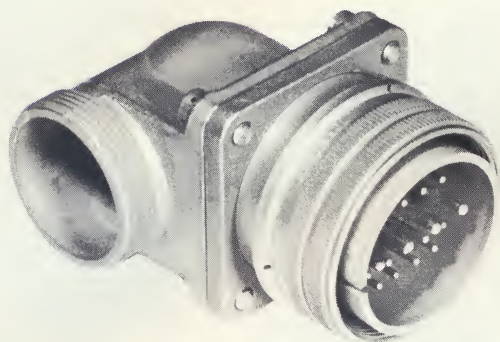
Amphenol-Midwestern Connector Division saved the customer quite a bit of money, not to mention time and trouble, with the adaptation shown here. Using standard 67 series connectors as the point of departure, Midwestern's engineers developed a special insert using Amphenol Poke Home contacts. The removable contacts allow faster, easier assembly and allow fast changes in circuitry. Call on the Amphenol Area Division near you. We'll work with you to find the best answer, both technically and economically, to your special design requirements.



# MS CONNECTOR SHELL TYPES

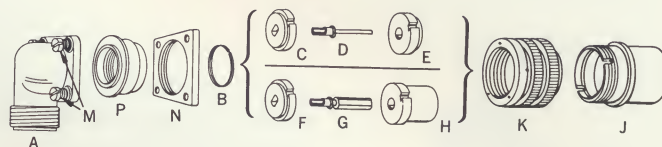
## Angle Plugs

Meet or exceed standard performance requirements of military specification MIL-C-5015.



### MS 3108A—Solid Shell

Sturdy and rugged. Its right-angle configuration makes it particularly adaptable to applications where space in front of panel or wall is at a premium. Back shell is threaded to accommodate standard fittings. Swivel ring and swivel plate combination allow cable take off at any angle relative to front shell polarizing key.

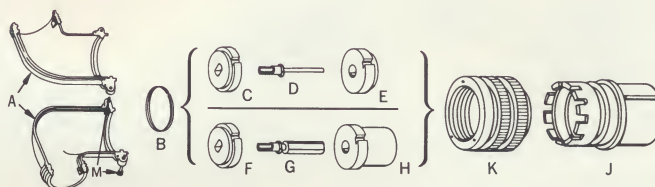
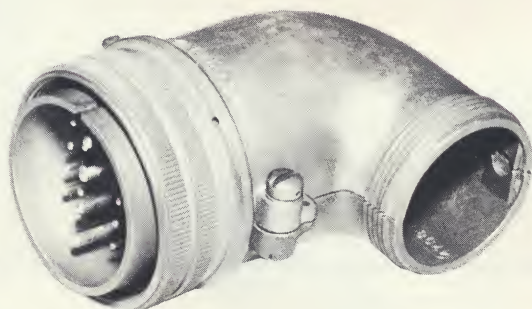


#### WITH PIN INSERT (Male)

- A Angle Housing
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- K Coupling Ring
- M Screws
- N Swivel Plate
- P Swivel Ring

#### WITH SOCKET INSERT (Female)

- A Angle Housing
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- K Coupling Ring
- M Screws
- N Swivel Plate
- P Swivel Ring



#### WITH PIN INSERT (Male)

- A Split Back Shell
- B Retainer Ring
- C Pin Rear Insert
- D Pin Contact
- E Pin Front Insert
- J Front Shell
- K Coupling Ring
- M Screws

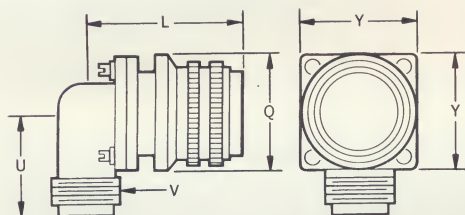
#### WITH SOCKET INSERT (Female)

- A Split Ring Shell
- B Retainer Ring
- F Socket Rear Insert
- G Socket Contact
- H Socket Front Insert
- J Front Shell
- K Coupling Ring
- M Screws

### MS 3108B—Split Shell

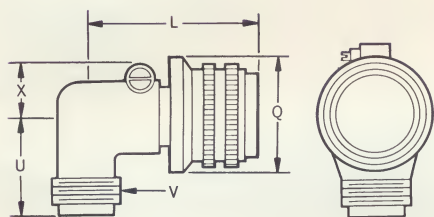
Most popular angle plug—lightweight—provides a roomy cavity for the bend in the wires. Back shell halves are easily removed to make wire soldering and inspecting convenient. Keying of front shell lets angle housing be set at any increment of 45° relative to plug shell keyway.

# MS 3108A

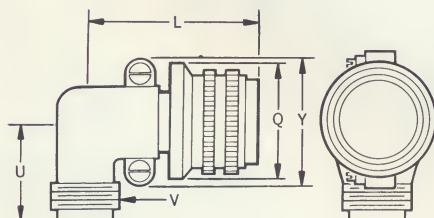


Connector Size	Dimensions—Inches				
	L	Q	U	V Fitting Threads	Y
8S	1 1/4	3/4	7/8	1/2-28	2 5/32
10S	1 1/4	7/8	7/8	1/2-28	2 5/32
10SL	1 5/16	7/8	1	5/8-24	1 1/16
12S	1 3/8	1	1	5/8-24	1 1/16
12SL	1 3/8	1	1	3/4-20	1 1/16
12	1 13/64	1	1	5/8-24	1 1/16
14S	1 3/8	1 1/8	1	3/4-20	1 1/16
14	1 13/16	1 1/8	1	3/4-20	1 1/16
16S	1 1/2	1 1/4	1 1/8	7/8-20	1 5/16
16	1 15/16	1 1/4	1 1/8	7/8-20	1 5/16
18	1 15/16	1 11/32	1 1/8	1 -20	1 5/16
20	2 1/16	1 19/32	1 5/16	1 3/16-18	1 5/8
22	2 1/16	1 19/32	1 5/16	1 3/16-18	1 5/8
24	2 15/32	1 23/32	1 1/2	1 7/16-18	2
28	2 15/32	1 31/32	1 1/2	1 7/16-18	2
32	2 11/16	2 7/32	1 25/32	1 3/4 -18	2 1/2
36	2 11/16	2 15/32	1 25/32	2 -18	2 1/2

# MS 3108B



Connector Size	Dimensions—Inches				
	L	Q	U	V Fitting Threads	X
8S	1 7/16	3/4	7/8	1/2-28	
10S	1 3/8	7/8	7/8	1/2-28	
10SL	1 1/2	7/8	1	5/8-24	
12S	1 9/16	1	1	5/8-24	1/2
12	1 7/8	1	1	5/8-24	1/2
14S	1 23/32	1 1/8	1 1/16	3/4-20	2 1/32
14	1 15/16	1 1/8	1 1/16	3/4-20	2 1/32



Connector Size	Dimensions—Inches				
	L	Q	U	V Fitting Threads	Y
16S	1 3/4	1 1/4	1 1/8	7/8-20	1 1/2
16	2 1/8	1 1/4	1 1/8	7/8-20	1 1/2
18	2 5/32	1 11/32	1 3/16	1 -20	1 41/64
20	2 3/8	1 15/32	1 5/16	1 3/16-18	1 13/16
22	2 13/32	1 19/32	1 5/16	1 3/16-18	1 5/16
24	2 5/8	1 23/32	1 7/16	1 7/16-18	2 1/16
28	2 5/8	1 31/32	1 7/16	1 7/16-18	2 5/16
32	2 13/16	2 7/32	1 3/4	1 3/4 -18	2 19/32
36	2 27/32	2 15/32	1 5/16	2 -18	2 27/32



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
<b>1 CONTACT</b>													
8S-1S -1P	.02 .02		.03 .03		.02	.01 .01		.03 .03		.01 .01	.02 .02	.01	
†10S-2S † -2P	.02 .02		.05 .05		.02	.02 .02		.05 .04		.02 .02	.03 .03	.02	
12S-4S -4P	.04 .03				.03	.03 .03				.03 .02		.02	
12-5S -5P	.05 .04				.04	.04 .04				.03 .03		.03	
**14-3S ** -3P	.05 .04					.04 .04				.03 .03			
†14S-4S † -4P	.05 .04	.05 .04			.04	.04 .03	.04 .03			.03 .03		.04	
16-2S -2P	.07 .06				.06	.07 .05				.06 .05		.05	
16S-3S -3P	.05 .05	.05 .05			.05	.04 .04	.04 .04			.04 .03		.03	
16-12S -12P	.10 .08	.10 .08				.09 .07	.09 .07			.08 .06			
18-6S -6P	.12 .09	.13 .11				.11 .08	.12 .10			.10 .07			
18-7S -7P	.10 .08	.12 .10			.10 .08§	.10 .08	.11 .09			.08 .06		.08 .06§	
18-16S -16P	.09 .09	.11 .11				.09 .09	.10 .10			.07 .07			
*18-420S * -420P	.10 .10	.12 .11				.10 .09	.11 .10			.08 .07			
20-2S -2P	.16 .14	.17 .15			.14	.15 .13	.17 .14			.13 .10		.10	
22-7S -7P	.18 .15	.19 .16				.17 .14	.18 .15			.14 .11			
*24-835S * -835P	.18 .17	.20 .18				.17 .16	.18 .17			.13 .12			

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

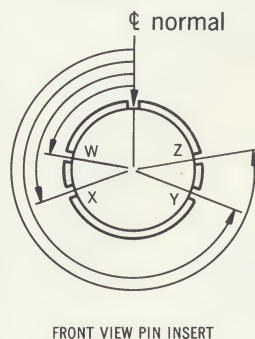
\*\*Consult factory for availability.

‡#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

- ① High voltage contact for 7 mm high tension cable. Rating 10,000 V. RMS 60 CPS at sea level—20 amps. max.
- ② High voltage contact. Rating 20,000 V. RMS 60 CPS at sea level—41 amps. max. in mated condition with connectors potted.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
			1 CONTACT														
	1/16	A					1		.02 .02		.04 .03				.04 .04	.04 .04	8S-1S -1P
	1/16	A					1		.02 .02		.05 .05		.02 .02		.04 .04	.04 .04	†10S-2S † -2P
	1/8	D					1		.03 .02				.03 .02		.07 .07	.07 .07	12S-4S -4P
	1/8	D				1			.06 .05				.06 .05		.09 .08	.08 .07	12-5S -5P
	1/8	A			1				.06 .05				.06 .05		.09 .08	.08 .07	**14-3S ** -3P
	1/8	D					1		.06 .05	.06 .05			.06 .05	.06 .05	.08 .08	.08 .07	†14S-4S † -4P
	3/16	E				1			.08 .07				.08 .07		.14 .13	.13 .11	16-2S -2P
	1/4	B					1		.07 .06	.07 .06			.07 .06	.07 .06	.12 .11	.10 .10	16S-3S -3P
	1/16	A		1					.11 .09	.11 .09			.11 .09		.16 .14	.15 .13	16-12S -12P
	1/8	D		1					.13 .11	.15 .13			.13 .10	.15 .13	.18 .15	.17 .14	18-6S -6P
	1/4	B			1				.12 .10	.14 .12			.12 .10	.14 .12	.17 .14	.16 .13	18-7S -7P
	5/16	C				1			.11 .11	.13 .12			.11 .11	.13 .12	.15 .15	.14 .14	18-16S -16P
			HIGH VOLTAGE② CONTACT						.12 .11	.13 .13			.12 .11	.13 .13	.16 .16	.16 .15	*18-420S * -420P
	1/8	D	1						.17 .15	.19 .19			.17 .15	.19 .16	.27 .24	.22 .19	20-2S -2P
	3/16	E	1						.19 .16	.21 .17			.19 .16	.21 .17	.29 .26	.24 .21	22-7S -7P
	7/16		HIGH VOLTAGE① CONTACT						.20 .19	.22 .20			.20 .19	.22 .20	.37 .36	.26 .25	*24-835S * -835P

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS						
Contact size:	20	16	12	8	4	0
Ampères:	10	22	41	73	135	245

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
2 CONTACTS													
10SL-4S -4P	.02		.04	.04	.02	.02		.04	.04	.02	.03	.02	
†12S-1S †-1P	LIKE 12S-3 BUT ROTATED 100° RIGHT												
†12S-2S †-2P	LIKE 12S-3 BUT ROTATED 25° RIGHT												
12S-3S -3P	.04 .03		.07 .07	.07 .07	.04 .03	.03 .03		.07 .06	.07 .06	.03 .02	.05 .04	.03 .02	
*12S-6S *-6P	.04 .03				.03	.03 .03				.03 .02		.02	
†14S-9S †-9P	.05 .04	.05 .04	.08 .07	.08 .07	.05 .04	.04 .04	.05 .04	.07 .06	.07 .06	.03 .03	.05 .05	.03 .03	
16S-4S -4P	.06 .05	.06 .05	.09 .08	.09 .08	.06 .05	.05 .04	.06 .05	.08 .07	.08 .08	.04 .04	.06 .06	.04 .04	.04
†16-11S †-11P	.08 .06		.11 .09		.06	.07 .06	.10 .09			.07 .05	.08 .06	.05	.05
16-13S -13P	.07 .06				.06	.07 .06				.06 .05		.05	.05
**†16S-15S **†-15P	LIKE 16S-4 ROTATED 100° RIGHT												
**†16S-16S **†-16P	LIKE 16S-4 ROTATED 250° RIGHT												
†18-3S †-3P	.10 .08	.12 .10			.08	.10 .08	.11 .09			.08 .06		.06	.06
18-14S -14P	.12 .09	.14 .11				.11 .09	.13 .10			.10 .07			
**†18-25S **†-25P	LIKE 18-3 ROTATED 100° RIGHT												
**†18-26S **†-26P	LIKE 18-3 ROTATED 250° RIGHT												
**18-404S* ** -404P*	LIKE 18-3 EXCEPT THERMOCOUPLE												

† Inactive for new military design but available for replacement or non-military purposes.

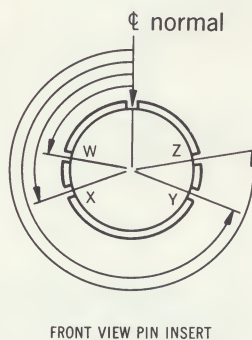
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
2 CONTACTS																	
	1/16	A					2		.03		.05	.05	.03		.06	.05	10SL-4S -4P
																	†12S-1S † -1P
																	†12S-2S † -2P
W-70 X-145 Y-215 Z-290	1/16	A					2		.03 .02		.07 .07	.07 .07	.03 .02		.07 .07	.07 .07	12S-3S -3P
	1/16		THERMO- COUPLE				2		.04 .03				.04 .03		.07 .07	.08 .07	*12S-6S * -6P
W-70 X-145 Y-215 Z-290	1/16	A					2		.06 .05	.06 .05			.06 .05	.06 .05	.08 .08	.08 .07	†14S-9S † -9P
W-35 X-110 Y-250 Z-325	1/8	D					2		.07 .06	.07 .06	.09 .08	.09 .08	.07 .06	.07 .06	.12 .11	.10 .10	16S-4S -4P
W-35 X-110 Y-250 Z-325	1/16	A					2		.09 .07		.12 .11		.09 .07		.14 .13	.13 .12	†16-11S † -11P
W-35 X-110 Y-250 Z-325	1/16	A					2		.08 .07				.08 .07		.14 .13	.13 .12	16-13S -13P
																	***†16S-15S ***† -15P
																	***†16S-16S ***† -16P
W-35 X-110 Y-250 Z-325	1/8	D					2		.12 .10	.13 .12			.12 .10	.13 .12	.16 .14	.15 .13	†18-3S † -3P
W-80 X-110 Y-250 Z-280	1/16	A		1			1		.13 .11	.15 .13			.13 .11	.15 .13	.18 .16	.17 .15	18-14S -14P
																	***†18-25S ***† -25P
																	***†18-26S ***† -26P
																	**18-404S* ** -404P

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS						
Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
<b>2 CONTACTS (Continued)</b>													
20-5S -5P	.12 .10	.13 .11			.10	.11 .09	.12 .10			.09 .07		.07	.07
†20-12S † -12P	.14 .12	.16 .13				.14 .11	.15 .12			.11 .08			
20-23S -23P	.15 .11	.16 .12				.14 .10	.15 .12			.11 .08			
†22-1S † -1P	.16 .12	.18 .14			.12	.16 .12	.17 .12			.13 .09		.09	.09
22-3S -3P	.16 .13	.18 .14				.16 .12	.17 .13			.13 .09			
†22-8S † -8P	.15 .12	.16 .13			.15 .12§	.14 .11	.15 .12			.11 .08		.11 .08§	
22-11S -11P	.14 .11	.16 .13			.14	.13 .10	.14 .11			.10 .07		.10	
24-1S -1P	.22 .21	.23 .23				.20 .20	.22 .22			.17 .17			
†24-9S † -9P	.22 .17	.23 .19			.17	.21 .16	.22 .17			.17 .12		.12	.12
†28-7S † -7P	.27 .20	.29 .22				.26 .19	.28 .21			.22 .15			
†32-5S † -5P	.36 .29	.39 .22			.29	.35 .28	.37 .30			.32 .25		.25	.25
<b>3 CONTACTS</b>													
†10SL-3S † -3P	.03		.04	.04	.03	.03		.03	.04	.02	.03	.02	
†14S-1S † -1P	.05 .04	.05 .04			.05 .04	.04 .04	.05 .04			.03 .03		.03 .03	.03
14S-7S -7P	.05 .04	.05 .04	.08 .07	.08 .07	.05 .04	.04 .04	.05 .04	.07 .06	.07 .06	.03 .03	.06 .05	.03 .03	

† Inactive for new military design but available for replacement or non-military purposes.

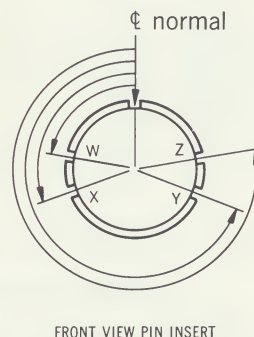
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

‡ #20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS										PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
2 CONTACTS (Continued)																		
W-35 X-110 Y-250 Z-325	⅜ <sub>16</sub>	E					2		.13 .11	.15 .13			.13 .11	.15 .13	.23 .23	.18 .15	20-5S -5P	
W-80 X-110 Y-250 Z-280	⅜ <sub>16</sub>	A		1			1		.16 .13	.17 .14			.16 .13	.17 .14	.25 .22	.20 .17	†20-12S † -12P	
W-35 X-110 Y-250 Z-325	⅜ <sub>16</sub>	A			2				.16 .12	.17 .14			.16 .12	.17 .14	.25 .22	.20 .17	20-23S -23P	
W-35 X-110 Y-250 Z-325	⅜ <sub>8</sub>	D			2				.18 .14	.19 .15			.18 .14	.19 .15	.27 .23	.23 .19	†22-1S † -1P	
W-35 X-110 Y-250 Z-280	⅜ <sub>8</sub>	D		1			1		.18 .14	.19 .15			.18 .14	.19 .15	.28 .24	.23 .19	22-3S -3P	
W-35 X-110 Y-250 Z-325	⅜ <sub>16</sub>	E				2			.16 .13	.18 .14			.16 .13	.18 .14	.26 .23	.21 .18	†22-8S † -8P	
W-35 X-110 Y-250 Z-325	¼	B					2		.15 .12	.17 .14			.15 .12	.17 .14	.25 .22	.20 .17	22-11S -11P	
W-80 X-110 Y-250 Z-280	⅜ <sub>8</sub>	D	1				1		.24 .24	.25 .25			.24 .24	.25 .25	.41 .40	.30 .30	24-1S -1P	
W-35 X-110 Y-250 Z-325	⅜ <sub>16</sub>	A		2					.24 .19	.25 .20			.24 .19	.25 .20	.41 .36	.30 .25	†24-9S † -9P	
W-35 X-110 Y-250 Z-325	⅜ <sub>8</sub>	D		2					.29 .22	.31 .24			.29 .22	.31 .24	.43 .36	.35 .28	†28-7S † -7P	
W-35 X-110 Y-250 Z-325	⅜ <sub>8</sub>	D	2						.38 .31	.40 .30					.62 .55	.48 .41	†32-5S † -5P	
3 CONTACTS																		
	⅜ <sub>16</sub>	A					3		.03		.05	.05	.03		.06	.05	†10SL-3S † -3P	
	⅜ <sub>16</sub>	A					3		.06 .05	.06 .05			.06 .05	.06 .05	.08 .08	.08 .07	†14S-1S † -1P	
W-90 X-180 Y-270	⅜ <sub>16</sub>	A					3		.06 .05	.06 .05	.08 .07	.08 .07	.06 .05	.06 .05	.08 .08	.08 .07	14S-7S -7P	

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

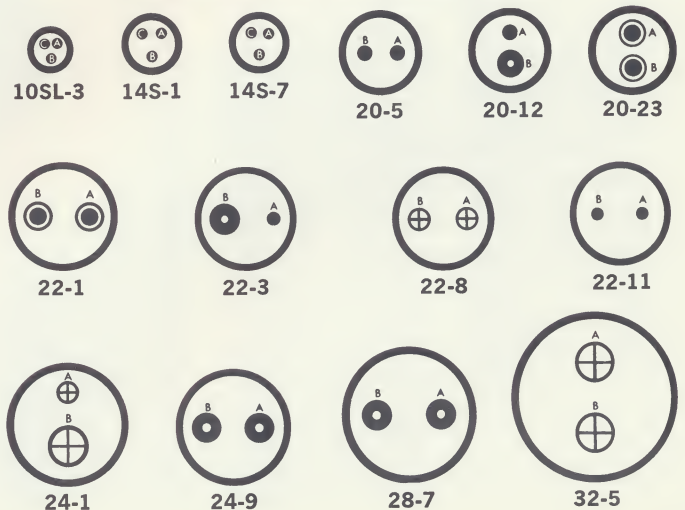


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)			1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-0R E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>3 CONTACTS (Continued)</b>													
***†14S-12S ***†-12P	LIKE 14S-1 ROTATED 100° RIGHT												
***†14S-13S ***†-13P	LIKE 14S-1 ROTATED 260° RIGHT												
†16S-5S †-5P	.06 .05	.06 .05	.09 .08		.06 .05	.05 .04	.06 .05	.08 .08		.04 .04	.07 .06	.04 .04	.04
†16S-6S †-6P	.06 .05	.06 .05			.05	.05 .04	.06 .05			.04 .04		.04	.05
16-7S -7P	.08 .08				.08 .08§	.08 .07				.07 .07		.07 .07§	
16-10S -10P	.08 .06		.12 .10	.10 .08	.06	.08 .05		.11 .09	.10 .08	.07 .05	.09 .07	.05	.05
†16S-14S †-14P	LIKE 16S-5 ROTATED 110° RIGHT												
***†16S-17S ***†-17P	LIKE 16S-5												
18-5S -5P	.10 .08	.12 .10			.08	.10 .08	.11 .09			.08 .06		.06	.06
†18-22S †-22P	.09 .08	.12 .10			.08 .08	.09 .08	.10 .09			.07 .06		.06 .06	.06
***†18-27S ***†-27P	LIKE 18-5 ROTATED 100° RIGHT												
***†18-28S ***†-28P	LIKE 18-5 ROTATED 250° RIGHT												
†20-3S †-3P	.14 .11	.15 .12			.13	.13 .10	.14 .11			.10 .07		.09	
†20-6S †-6P	.12 .10	.14 .11			.10	.11 .09	.13 .10			.09 .07		.07	.07
†20-19S †-19P	.16 .12	.17 .13				.15 .11	.16 .12			.13 .09			
22-2S -2P	.17 .13	.19 .14			.16	.17 .12	.18 .13			.14 .09		.13	

† Inactive for new military design but available for replacement or non-military purposes.

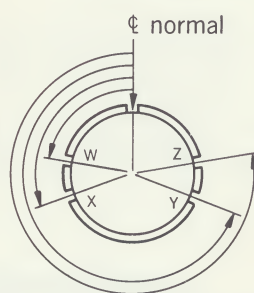
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

‡#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

### ALTERNATE INSERT POSITIONS



FRONT VIEW PIN INSERT

### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
3 CONTACTS (Continued)																	
																	***†14S-12S ***†-12P
																	***†14S-13S ***†-13P
W-70 X-145 Y-215 Z-290	1/16	A					3		.07 .06	.07 .06	.09 .08		.07 .06	.07 .06	.12 .11	.10 .10	†16S-5S †-5P
W-90 X-180 Y-270	1/16	A					3		.07 .06	.07 .06			.07 .06	.07 .06	.12 .11	.10 .10	†16S-6S †-6P
W-80 X-110 Y-250 Z-280	1/16	A			1		2		.09 .09				.09 .09		.15 .15	.14 .13	16-7S -7P
W-90 X-180 Y-270	1/16	A					3		.09 .07		.13 .11	.11 .09	.09 .07		.15 .12	.14 .11	16-10S -10P
																	†16S-14S †-14P
																	***†16S-17S ***†-17P
W-80 X-110 Y-250 Z-280	1/8	D				2	1		.12 .10	.13 .12			.12 .10	.13 .12	.16 .14	.15 .14	18-5S -5P
W-70 X-145 Y-215 Z-290	1/8	D					3		.11 .09	.13 .11			.11 .09	.13 .11	.16 .14	.15 .13	†18-22S †-22P
																	***†18-27S ***†-27P
																	***†18-28S ***†-28P
W-70 X-145 Y-215 Z-290	1/8	D				3			.15 .12	.16 .13			.15 .12	.16 .13	.24 .21	.19 .16	†20-3S †-3P
W-70 X-145 Y-215 Z-290	1/8	D					3		.13 .11	.15 .13			.13 .11	.15 .13	.23 .21	.18 .16	†20-6S †-6P
W-90 X-180 Y-270	1/16	A			3				.17 .13	.19 .15			.17 .13	.19 .15	.27 .23	.21 .18	†20-19S †-19P
W-70 X-145 Y-215 Z-290	1/8	D			3				.19 .14	.20 .16			.19 .14	.20 .16	.29 .24	.24 .19	22-2S -2P

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS	
Contact size:	20 16 12 8 4 0
Amperes:	10 22 41 73 135 245

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>3 CONTACTS (Continued)</b>													
†22-6S † -6P	.16 .12	.18 .15				.16 .12	.17 .13			.13 .09			
22-9S -9P	.15 .12	.17 .14			.12	.15 .11	.15 .12			.12 .08		.08	.08
**22-21S ** -21P	.18 .15	.19 .16				.17 .14	.18 .15			.10 .08			
**†22-25S **† -25P	.18 .15	.19 .16				.17 .14	.18 .15			.10 .08			
24-14S -14P	.22 .18	.24 .20				.21 .17	.23 .18			.18 .13			
28-3S -3P	.26 .19	.28 .21				.24 .17	.27 .20			.21 .14			
†28-6S † -6P	.30 .22	.32 .24			.22	.28 .20	.30 .22			.25 .17		.17	.17
*28-880S * -880P	.28 .25	.30 .27				.27 .24	.29 .20			.23 .14			
†36-4S † -4P	.50 .40	.53 .43			.40	.48 .38	.50 .40			.44 .34		.34	.34
<b>4 CONTACTS</b>													
*12SL-844S * -844P										.03			
†14S-2S † -2P	.05 .04	.05 .04	.08 .07	.08 .07		.04 .04	.05 .05	.07 .06	.07 .07	.03 .03	.06 .05	.03 .03	.03
†14S-10S † -10P	LIKE 14S-2 ROTATED 100° RIGHT												
†14S-11S † -11P	LIKE 14S-2 ROTATED 250° RIGHT												
16-9S -9P	.08 .07					.07 .06							.06

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

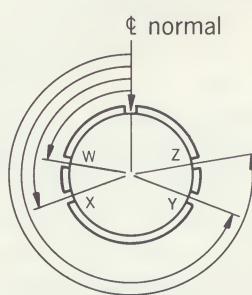
\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contact A has D service rating. Contacts B & C have A service rating.

### ALTERNATE INSERT POSITIONS



FRONT VIEW PIN INSERT

### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
			3 CONTACTS (Continued)														
W-80 X-110 Y-250 Z-280	⅛	D			2		1		.18 .14	.19 .15			.18 .14	.19 .15	.28 .24	.23 .19	†22-6S † -6P
W-70 X-145 Y-215 Z-290	⅜	E				3			.17 .13	.18 .15			.17 .13	.18 .15	.26 .23	.21 .18	22-9S -9P
W-80 X-110 Y-250 Z-280	⅛	A	1				2		.19 .17	.21 .18			.19 .17	.21 .18	.29 .26	.24 .21	**22-21S ** -21P
W-80 X-110 Y-250 Z-280	⅛	A	1				2		.20 .17	.21 .18			.19 .17	.21 .18	.29 .26	.24 .21	**†22-25S **† -25P
W-80 X-110 Y-250 Z-280	⅛	A	1			2			.24 .20	.26 .22			.24 .20	.26 .22	.41 .37	.30 .26	24-14S -14P
W-70 X-145 Y-250 Z-290	⅜	E			3				.28 .21	.30 .23			.28 .21	.30 .23	.42 .35	.34 .27	28-3S -3P
W-70 X-145 Y-215 Z-290	⅛	D		3					.31 .23	.33 .26			.31 .23	.33 .26	.45 .38	.38 .30	†28-6S † -6P
	⅛		COAX CONTACTS						.30 .27	.32 .29			.30 .27	.32 .29	.44 .41	.36 .33	*28-880S * -880P
W-70 X-145 Y-215 Z-290	⅛ ⅛	①	1 2						.51 .40	.52 .42					.72 .62	.62 .52	†36-4S † -4P

<b>4 CONTACTS</b>																		
	1/16						4			.05						.08		*12SL-844S * -844P
X-120 Y-240		INST.					4			.06 .05	.06 .05	.08 .07	.08 .07	.06 .05	.06 .05	.08 .08	.08 .07	†14S-2S † -2P
																		†14S-10S † -10P
																		†14S-11S † -11P
W-35 X-110 Y-250 Z-325	1/16	A				2	2			.09 .08				.09 .08	.10 .09	.15 .13	.13 .12	16-9S -9P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

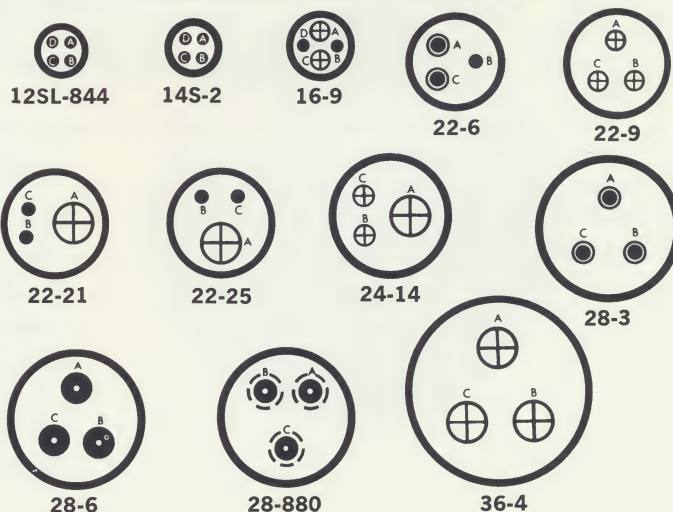
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)			1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>4 CONTACTS (Continued)</b>													
18-4S -4P	.09 .08	.11 .10	.13 .12	.13 .12	.08 .08	.09 .08	.10 .09	.13 .11	.13 .11	.07 .06	.10 .08	.06 .06	.06
†18-10S † -10P	.11 .09	.13 .11			.10 .09	.11 .08	.12 .10			.09 .07		.08 .07	.07
18-13S -13P	.12 .09	.14 .11				.12 .09	.13 .10			.10 .07			
18-15S -15P	.10 .09	.12 .11			.09	.10 .08	.11 .10			.08 .07		.07	
20-4S -4P	.14 .11	.15 .12	.10 .06		.13 .11	.13 .10	.14 .11	.10 .06		.10 .08	.10 .06	.09 .08	.08
20-13S -13P	.13 .10	.14 .11				.12 .09	.13 .10			.09 .07			
20-20S -20P	.16 .12	.17 .14			.12	.15 .11	.16 .13			.13 .09		.09	.09
20-24S -24P	.15 .12	.16 .13				.14 .11	.15 .12			.11 .08			
†22-4S † -4P	.17 .13	.19 .14			.13	.17 .12	.17 .13			.14 .09		.09	.09
22-10S -10P	.14 .11	.16 .13			.11	.13 .11	.14 .12			.10 .08		.08	.08
22-22S -22P	.19 .14	.21 .15				.19 .13	.19 .14			.16 .10			
24-4S -4P	.21 .18	.23 .20			.18	.20 .17	.22 .18			.17 .13		.13	.13
24-18S -18P	.18 .14	.20 .16				.17 .13	.19 .14			.13 .09			
24-22S -22P	.22 .18	.24 .18			.18	.21 .17	.23 .17			.18 .13		.13	.13
*28-410S * -410P	.22 .19	.24 .21				.21 .17	.23 .19			.17 .14			

† Inactive for new military design but available for replacement or non-military purposes.

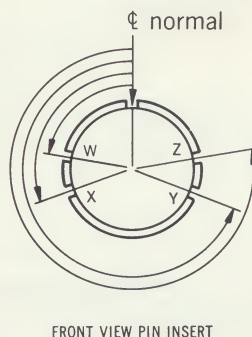
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

‡#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE					STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
4 CONTACTS (Continued)																	
W-35 X-110 Y-250 Z-325	1/8	D					4		.11 .10	.13 .11	.15 .13	.15 .13	.11 .10	.13 .11	.16 .14	.15 .13	18-4S -4P
X-120 Y-240	1/16	A				4			.13 .10	.14 .12			.13 .10	.14 .12	.17 .15	.16 .14	†18-10S † -10P
W-80 X-110 Y-250 Z-280	1/16	A			1	3			.13 .11	.15 .13			.13 .11	.15 .13	.18 .15	.17 .15	18-13S -13P
X-120 Y-240	1/16	A	THERMO			4			.11 .10	.13 .12			.11 .10	.13 .12	.16 .15	.15 .14	18-15S -15P
W-45 X-110 Y-250	1/8	D				4			.15 .13	.16 .14	.10 .06		.15 .12	.16 .14	.24 .22	.19 .16	20-4S -4P
		A					4		.14 .11	.15 .13			.15 .12	.16 .14	.24 .21	.18 .16	20-13S -13P
W-80 X-110 Y-250 Z-280	1/16	A		1		3			.17 .13	.19 .15			.17 .13	.19 .15	.27 .23	.22 .18	20-20S -20P
W-35 X-110 Y-250 Z-325	1/16	A			2		2		.16 .13	.17 .14			.16 .13	.17 .14	.25 .22	.20 .17	20-24S -24P
W-35 X-110 Y-250 Z-325	1/16	A			2		2		.19 .14	.20 .16			.19 .14	.20 .16	.28 .24	.23 .19	†22-4S † -4P
W-35 X-110 Y-250 Z-325	3/16	E					4		.15 .13	.17 .14			.15 .13	.17 .14	.25 .22	.20 .18	22-10S -10P
X-110 Y-250	1/16	A			4				.21 .15	.22 .17			.21 .15	.22 .17	.30 .25	.25 .20	22-22S -22P
W-80 X-110 Y-250 Z-280	1/8	D	1				3		.23 .20	.25 .22			.23 .20	.25 .22	.40 .37	.30 .26	24-4S -4P
SHORTING TYPE							4		.20 .16	.22 .18			.20 .16	.22 .18	.37 .33	.30 .26	24-18S -18P
W-45 X-110 Y-250	1/8	D			4				.24 .20	.26 .26			.24 .20	.26 .20	.41 .35	.30 .26	24-22S -22P
	3/32 1/2						1 3		.24 .20	.26 .22			.24 .20	.26 .22	.38 .35	.30 .27	*28-410S * -410P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

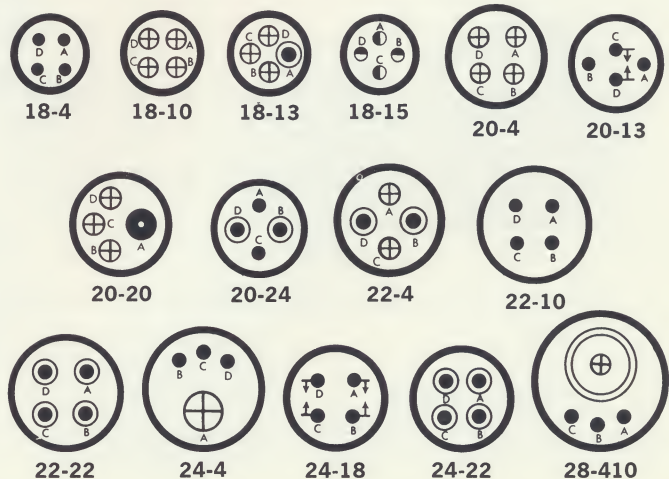


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof

### 4 CONTACTS (Continued)

*28-840S * -840P	.30 .22	.32 .24				.28 .20	.30 .23			.25 .17			
32-17S -17P	.37 .27	.41 .31			.27	.37 .27	.38 .28			.34 .24		.24	.22
36-5S -5P	.54 .44	.57 .46				.52 .41	.53 .43			.47 .37			

### 5 CONTACTS

14S-5S -5P	.05 .04	.05 .04	.08 .07	.08 .07	.05 .04	.04 .04	.05 .04	.07 .07	.08 .07	.04 .03	.06 .05	.04 .03	.03
16S-8S -8P	.06 .05	.06 .05	.09 .09	.10 .09	.06 .05	.05 .05	.06 .05	.09 .08	.09 .08	.04 .04	.07 .06	.04 .04	
18-11S -11P	.11 .09	.13 .11	.15 .13	.15 .13	.10	.11 .09	.12 .10	.14 .12	.14 .13	.09 .07	.12 .10	.08	
†18-20S † -20P	.09 .08	.11 .10	.13 .12			.09 .08	.10 .09	.13 .12		.07 .06	.10 .09		
†18-29S † -29P	.10 .08	.11 .10				.09 .08	.11 .09			.08 .06			
†18-30S † -30P	LIKE 18-20 ROTATED 110° RIGHT												
**†18-31S **† -31P	LIKE 18-20 ROTATED 260° RIGHT												
20-14S -14P	.16 .12	.17 .13				.15 .11	.16 .13			.13 .09			
22-12S -12P	.16 .13	.18 .14				.16 .12	.16 .13			.13 .09			
22-13S -13P	.16 .12	.17 .14				.15 .12	.16 .12			.12 .09			
22-34S -34P	.15 .12	.17 .14				.15 .11	.16 .12			.12 .09			
24-12S -12P	.23 .17	.25 .19			.17	.22 .16	.24 .18			.19 .13		.13	.13

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

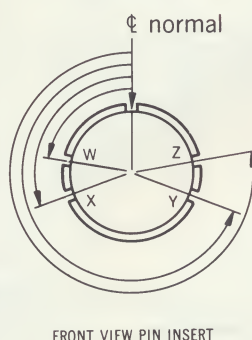
\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contact E has D service rating. Contacts A, B, C & D have A service rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
4 CONTACTS (Continued)																		
	5/32			2	2				.31 .24	.33 .26				.31 .24	.33 .26	.45 .38	.37 .30	*28-840S * -840P
W-45 X-110 Y-250	1/8	D		4					.40 .30	.42 .32						.63 .54	.49 .39	32-17S -17P
X-120 Y-240	1/16	A	4						.54 .44	.56 .45						.76 .65	.65 .55	36-5S -5P
5 CONTACTS																		
X-110		INST					5		.06 .05	.06 .05	.08 .07	.08 .07	.06 .05	.06 .05	.08 .08	.08 .08		14S-5S -5P
X-170 Y-265	1/16	A					5		.07 .06	.07 .06	.10 .09	.10 .09	.07 .06	.07 .06	.12 .11	.11 .10		16S-8S -8P
X-170 Y-265	1/16	A					5		.13 .11	.15 .12	.17 .15	.17 .15	.13 .10	.15 .12	.18 .15	.17 .14		18-11S -11P
W-90 X-180 Y-270	1/16	A					5		.11 .10	.13 .11	.15 .14		.11 .10	.13 .11	.15 .14	.15 .13		†18-20S † -20P
W-90 X-180 Y-270	1/16	A					5		.11 .10	.13 .11			.11 .10	.13 .11	.16 .14	.15 .13		†18-29S † -29P
																		†18-30S † -30P
																		††18-31S †† -31P
W-80 X-110 Y-250 Z-280	1/16	A			2	3			.17 .13	.19 .15			.17 .13	.19 .15	.27 .23	.21 .18		20-14S -14P
W-80 X-110 Y-250 Z-280	1/8	D			2		3		.18 .14	.19 .16			.18 .14	.19 .16	.27 .24	.23 .19		22-12S -12P
W-35 X-110 Y-250 Z-325	1/8 1/16	①				4	1		.17 .14	.18 .15			.17 .14	.18 .15	.27 .23	.22 .19		22-13S -13P
W-80 X-110 Y-250 Z-280	1/8	D				3	2		.17 .13	.18 .15			.17 .13	.18 .15	.26 .23	.22 .18		22-34S -34P
W-80 X-110 Y-250 Z-280	1/16	A		2		3			.25 .20	.27 .21			.25 .20	.27 .21	.42 .36	.32 .26		24-12S -12P

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

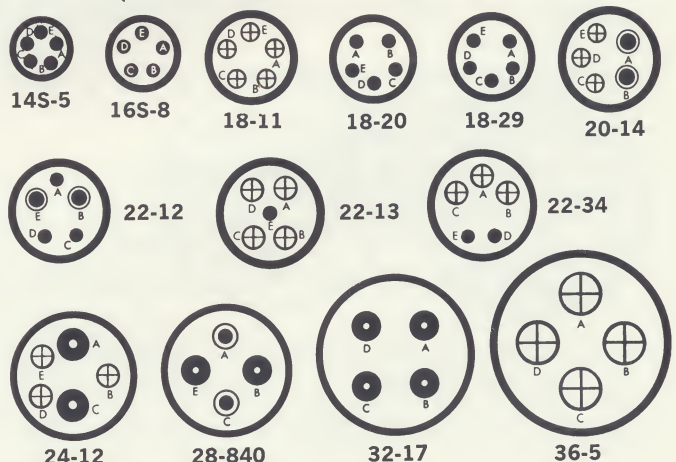
SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)			1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS						
Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>5 CONTACTS (Continued)</b>													
†24-17S † -17P	.18 .14	.20 .16				.17 .13	.18 .15			.13 .10			
24-23S -23P	.21 .16	.23 .18				.20 .15	.21 .16			.16 .11		.15	
28-5S -5P	.28 .21	.30 .23				.28 .19	.28 .21			.23 .16			
32-1S -1P	.37 .29	.41 .33			.29	.37 .29	.38 .30			.33 .26		.26	.26
32-2S -2P	.35 .25	.38 .29				.34 .25	.35 .26			.31 .32			
**†32-19S **† -19P	LIKE 32-1 ROTATED 100° LEFT												
†36-2S † -2P	.50 .40	.52 .43				.47 .38	.49 .39			.43 .33			
<b>6 CONTACTS</b>													
†14S-6S † -6P	.05 .04	.05 .04	.08 .07		.05 .04	.04 .04	.05 .04	.08 .07		.04 .03	.06 .05	.04 .03	.03
†18-12S † -12P	.10 .09	.11 .10	.14 .12		.09 .09	.09 .08	.11 .10	.13 .11		.08 .07	.10 .08	.08 .07	.07
20-8S -8P	.15 .12	.16 .13			.12	.14 .11	.15 .12			.12 .08		.08	
20-17S -17P	.15 .11	.16 .13			.14 .11	.14 .10	.15 .12			.11 .08		.10 .08	
20-22S -22P	.16 .13	.17 .14			.13	.15 .12	.16 .13			.13 .09		.09	
22-5S -5P	.15 .12	.17 .14			.12	.14 .11	.15 .12			.12 .09		.09	.09
22-15S -15P	.16 .13	.18 .14			.16	.15 .12	.16 .13			.13 .09		.13	

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

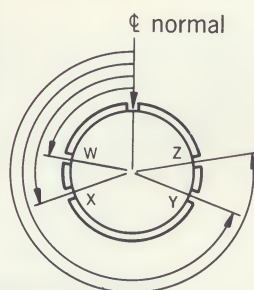
†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contact A has E service rating. Contacts B, C, D & E have D service rating.

② Contact D has E service rating. Balance have A service rating.

### ALTERNATE INSERT POSITIONS



FRONT VIEW PIN INSERT

### CODE OF WIRE SIZES



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
5 CONTACTS (Continued)																	
W-80 X-110 Y-250 Z-280	1/8	D				2	3		.20 .17	.22 .18			.20 .17	.22 .18	.37 .33	.26 .23	†24-17S † -17P
W-80 X-110 Y-250 Z-280	1/8	D			3		2		.23 .18	.25 .20			.24 .19	.25 .20	.40 .35	.29 .24	24-23S -23P
W-35 X-110 Y-250 Z-325	1/8	D		2		1	2		.30 .22	.32 .24			.30 .22	.32 .24	.44 .36	.36 .29	28-5S -5P
W-80 X-110 Y-250 Z-280	3/16 1/8	①	2			3			.40 .32	.42 .34					.62 .56	.49 .41	32-1S -1P
W-70 X-145 Y-215 Z-290	3/16	E		3			2		.38 .28	.40 .30					.61 .52	.47 .38	32-2S -2P
																	**†32-19S **† -19P
	1/8	D	3			2			.50 .40	.51 .42					.71 .62	.61 .51	†36-2S † -2P
6 CONTACTS																	
		INST.					6		.06 .06	.06 .05	.08 .07		.06 .06	.06 .06	.08 .08	.08 .08	†14S-6S † -6P
W-80 Z-280	1/16	A					6		.11 .10	.13 .13	.15 .14		.11 .10	.13 .13	.16 .15	.15 .14	†18-12S † -12P
W-80 X-110 Y-250 Z-280		INST.			2		4		.16 .13	.18 .14			.16 .13	.18 .14	.26 .23	.20 .17	20-8S -8P
W-90 X-180 Y-270	1/16	A				5	1		.16 .13	.17 .14			.16 .13	.17 .14	.25 .22	.20 .17	20-17S -17P
W-80 X-110 Y-250 Z-280	1/16	A			3		3		.17 .14	.19 .15			.17 .14	.19 .15	.27 .23	.22 .18	20-22S -22P
W-35 X-110 Y-250 Z-325	1/8	D				2	4		.17 .14	.18 .15			.17 .14	.18 .15	.26 .23	.21 .18	22-5S -5P
W-80 X-110 Y-250 Z-280	3/16 1/16	E A②				5	1		.17 .14	.19 .15			.17 .14	.19 .15	.27 .24	.22 .19	22-15S -15P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

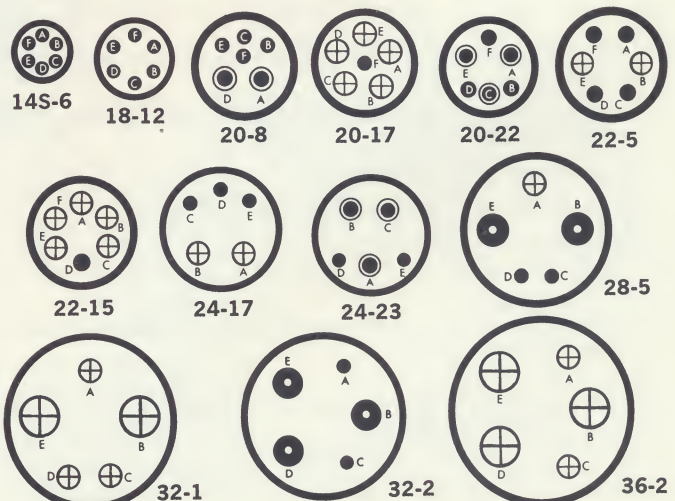
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## INSERT SPECIFICATIONS

## PLUGS (Figures give weight of available plugs in pounds.)

ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		INSERT NUMBER
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
6 CONTACTS (Continued)																	
W-80 X-110 Y-250 Z-280	1/8 1/16	①				2	4		.16 .14	.18 .15			.16 .14	.18 .15	.26 .23	.21 .18	†22-24S † -24P
																	**†22-32S **† -32P
									.20 .16	.21 .18			.20 .16	.21 .18	.37 .33	.26 .23	24-865S -865P
W-70 X-145 Y-215 Z-299	1/8	D		3			3		.32 .34	.34 .26			.32 .24	.34 .26	.46 .38	.38 .30	28-22S -22P
W-70 X-145 Y-215 Z-290	1/8	D	3			3			.51 .41	.50 .42					.73 .62	.63 .52	36-3S -3P
W-35 X-110 Y-250 Z-325	1/16	A	2	4					.55 .43	.57 .45					.77 .65	.67 .54	36-6S -6P

## 7 CONTACTS

W-80 Z-280	1/16	A				7			.07 .07	.07 .07	.10 .09	.10 .09	.07 .07	.07 .07	.14 .13	.11 .10	16S-1S -1P
W-80 X-110 Y-250 Z-280		INST.				2	5		.12 .10	.14 .12			.12 .10	.14 .12	.17 .15	.16 .14	18-9S -9P
																	**†18-17S **† -17P
																	**†18-18S **† -18P
W-80 Z-280	1/16	A				7			.16 .13	.18 .15	.12 .07	.21 .16	.16 .13	.18 .15	.26 .23	.21 .18	20-15S -15P
	1/8					2	5									.19 .16	*22-26S * -26P
W-80 Z-280	1/16	A				7			.18 .15	.20 .16			.18 .15	.20 .16	.28 .24	.23 .19	22-28S -28P
W-80 X-110 Y-250 Z-280	1/16	A		1			6		.20 .15	.21 .16			.20 .15	.21 .16	.29 .25	.25 .20	22-29S -29P
W-80 X-110 Y-250 Z-280	1/8 1/16	②				7			.16 .13	.17 .15			.16 .13	.17 .15	.25 .23	.21 .18	†22-33S † -33P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

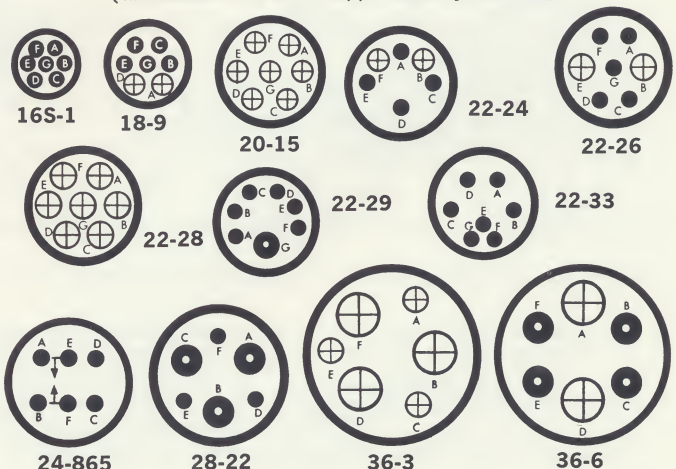
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

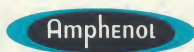
SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250 AC RMS 200	700 500	1250 900	1750 1250	2450 1750	4200 3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245





# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
<b>7 CONTACTS (Continued)</b>													
24-2S -2P	.20 .16	.22 .17			.15	.19 .14	.21 .16			.16 .10		.10	
†24-3S † -3P	.18 .15	.20 .16				.17 .14	.19 .15			.13 .10			
24-10S -10P	.26 .18	.28 .20				.25 .17	.26 .19			.21 .14			
24-16S -16P	.20 .16	.22 .17				.19 .14	.20 .16			.15 .11		.11	.11
24-27S -27P	.17 .14	.19 .16			.16 .13§	.16 .13	.18 .15			.13 .10		.12 .09§	
28-10S -10P	.31 .23	.33 .25			.23	.29 .21	.32 .23			.26 .18		.18	
28-833S* -833P*	.24 .19	.26 .21				.23 .17	.25 .20			.19 .14			
**†32-10S **† -10P	.35 .25	.39 .29				.35 .25	.40 .28						
**36-853S* ** -853P*	.38 .30	.40 .33				.36 .28	.37 .30						
<b>8 CONTACTS</b>													
18-8S -8P	.10 .09	.12 .11	.15 .12	.15 .12	.09 .09	.10 .09	.11 .10	.14 .12	.14 .12	.08 .07	.11 .09	.07 .07	.07
20-7S -7P	.13 .11	.14 .12	.09 .07	.18 .15	.12 .11	.12 .10	.13 .11	.09 .06	.17 .14	.09 .07	.09 .06	.08 .07	.07
20-9S -9P	.13 .11	.14 .12			.12	.12 .10	.13 .11			.10 .08		.07	.08

† Inactive for new military design but available for replacement or non-military purposes.

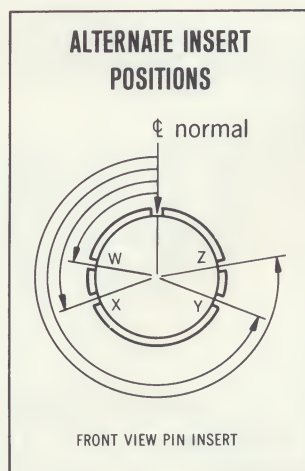
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

- ① Contacts C, D & E have A serv. rating. Balance have D serv. rating.
- ② Contact G has D service rating. Balance have A service rating.
- ③ Contacts C & D have A serv. rating. Contacts B & E have D serv. rating. Contacts A & F have E serv. rating. Contact G has B serv. rating.
- ④ Contacts C, D, E & F have A serv. rating. Balance have D serv. rating.
- ⑤ Contact H has D serv. rating. Balance have A serv. rating.





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
			7 CONTACTS (Continued)														
W-80 Z-280	⅛	D				7			.22 .18	.24 .19			.22 .18	.24 .19	.39 .34	.29 .24	24-2S -2P
W-80 X-110 Y-250 Z-280	⅛	D				2	5		.20 .17	.22 .18			.20 .17	.22 .18	.37 .34	.26 .23	†24-3S † -3P
W-80 Z-280	⅙ <sub>16</sub>	A				7			.28 .21	.30 .22			.28 .21	.30 .22	.45 .37	.34 .27	24-10S -10P
W-80 X-110 Y-250 Z-280	⅙ <sub>8</sub> ⅙ <sub>16</sub>	①				1	3	3	.22 .18	.24 .19			.22 .18	.24 .19	.39 .34	.28 .24	24-16S -16P
W-80 Z-280	⅙ <sub>16</sub>	E					7		.20 .16	.21 .18			.20 .16	.21 .18	.36 .33	.26 .23	24-27S -27P
W-80 X-110 Y-250 Z-280	⅙ <sub>8</sub> ⅙ <sub>16</sub>	②				2	2	3	.33 .24	.35 .26			.33 .24	.35 .26	.47 .38	.39 .30	28-10S -10P
	⅙ <sub>8</sub>						2		.26 .21	.28 .23			.26 .21	.28 .23	.40 .35	.32 .27	28-833S* -833P*
W-80 X-110 Y-250 Z-280	¼ ⅙ <sub>8</sub>	③				2	2		.38 .28	.40 .30					.61 .51	.48 .38	***†32-10S ***† -10P
	¼ ⅙ <sub>16</sub>						2	5	.38 .30	.40 .32					.60 .52	.50 .42	**36-853S* ** -853P*

## 8 CONTACTS

W-70 Z-290	1/16	A				1	7		.12 .10	.14 .12	.16 .14	.17 .14	.12 .10	.14 .12	.16 .15	.15 .14	18-8S -8P
W-80 X-110 Y-250 Z-280	1/8 1/16	④					8		.14 .12	.15 .13	.09 .07	.19 .16	.14 .12	.15 .13	.23 .21	.18 .16	20-7S -7P
W-80 X-110 Y-250 Z-280	1/8 1/16	⑤				1	7		.14 .12	.16 .14			.14 .12	.16 .14	.24 .22	.19 .17	20-9S -9P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)



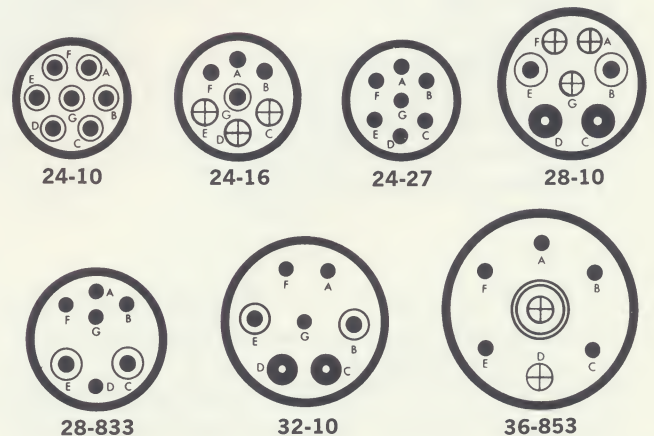
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC	200	500	900	1250	1750	3000
	RMS						
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)			1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>8 CONTACTS (Continued)</b>													
22-18S -18P	.14 .12	.15 .13			.13 .12	.13 .11	.14 .12			.10 .08		.09 .08	.08
22-23S -23P	.17 .13	.18 .15			.17 .13	.16 .13	.17 .13			.13 .10		.12 .10	.10
22-36S -36P	.15 .13	.17 .15				.14 .12	.15 .13			.12 .10			
**†22-404S* **†-404P*	.17 .13	.18 .15			.17 .13	.16 .13	.17 .13			.13 .10			.10
24-6S -6P	.20 .16	.22 .18			.16	.19 .15	.21 .16			.16 .11		.15 .11	.11
**†24-25S **†-25P	LIKE 24-6 ROTATED 100° RIGHT												
**†24-26S **†-26P	LIKE 24-6 ROTATED 250° RIGHT												
32-15S -15P	.38 .30	.42 .34				.38 .30	.39 .31			.35 .27			
<b>9 CONTACTS</b>													
20-16S -16P	.14 .12	.15 .13	.10 .07	.18 .15	.13 .12	.13 .11	.14 .12	.10 .06	.17 .14	.10 .08	.10 .06	.09 .08	.08
20-18S -18P	.14 .12	.15 .13	.11 .07	.19 .15	.12	.13 .11	.14 .12	.10 .06	.18 .14	.11 .08	.10 .06	.08	.08
20-21S -21P	.13 .12	.14 .13			.12 .12	.12 .10	.13 .12			.10 .08		.09 .08	
22-16S -16P	.16 .13	.17 .14			.13	.15 .12	.29 .22			.12 .09		.09	.09
22-17S -17P	.15 .12	.16 .14				.14 .12	.15 .13			.11 .09			
†22-20S †-20P	.14 .12	.16 .14			.13 .12	.14 .12	.15 .12			.11 .09		.10 .09	.09

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

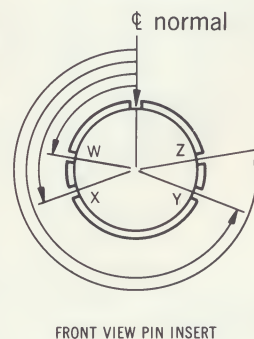
① Contacts C, D & E have A service rating. Balance have D service rating.

② Contact H has D serv. rating. Balance have A serv. rating.

③ Contacts A, G & H have D serv. rating. Balance have A serv. rating.

④ Contact A has D serv. rating. Balance have A serv. rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
8 CONTACTS (Continued)																		
W-80 X-110 Y-250 Z-280	⅛ ⅙ <sub>16</sub>	①					8		.15 .13	.17 .15			.15 .13	.17 .15	.25 .24	.20 .18	22-18S -18P	
W-35 Y-250	⅛ ⅙ <sub>16</sub>	②					8		.18 .15	.20 .16			.18 .15	.20 .16	.28 .24	.23 .20	22-23S -23P	
W-90 Y-270	⅛ ⅙ <sub>16</sub>	②	THERMO- COUPLE				8		.17 .15	.18 .16					.26 .24	.21 .19	22-36S -36P	
	⅙ <sub>16</sub>		THERMO- COUPLE				8		.18 .15	.20 .16			.18 .15	.20 .16	.28 .24	.23 .20	**†22-404S* **†-404P*	
W-80 X-110 Y-250 Z-280	⅛ ⅙ <sub>16</sub>	③					8		.22 .18	.24 .20			.22 .18	.27 .24	.39 .35	.29 .24	24-6S -6P	
																	**†24-25S **†-25P	
																	**†24-26S **†-26P	
W-35 X-110 Y-250 Z-280	⅛	D	2				6		.41 .33	.43 .35					.64 .56	.50 .42	32-15S -15P	
9 CONTACTS																		
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub>	A					2	7		.15 .13	.16 .14	.10 .07	.19 .16	.15 .13	.16 .14	.24 .22	.19 .17	20-16S -16P
W-35 X-110 Y-250 Z-325	⅙ <sub>16</sub>	A					3	6		.15 .13	.17 .14	.11 .07	.20 .16	.15 .13	.17 .14	.25 .22	.19 .17	20-18S -18P
W-35 X-110 Y-250 Z-325	⅙ <sub>16</sub>	A					1	8		.14 .12	.16 .14			.14 .12	.16 .14	.24 .22	.19 .17	20-21S -21P
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub>	A					3	6		.17 .14	.18 .16			.17 .14	.18 .16	.27 .24	.22 .19	22-16S -16P
W-80 X-110 Y-250 Z-280	⅛ ⅙ <sub>16</sub>	④					1	8		.16 .14	.17 .15			.16 .14	.17 .15	.26 .23	.21 .19	22-17S -17P
W-35 X-110 Y-250 Z-325	⅙ <sub>16</sub>	A						9		.16 .14	.17 .15			.16 .14	.17 .15	.25 .23	.21 .19	†22-20S †-20P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

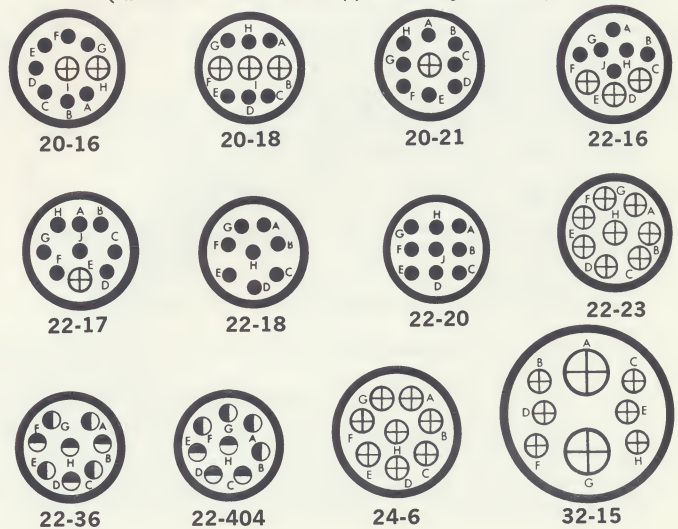


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

# MS CONNECTOR AVAILABILITY—Receptacles

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**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
<b>9 CONTACTS (Continued)</b>													
22-27S -27P	.15 .13	.17 .14			.13	.15 .12	.16 .13			.12 .09		.09	.09
24-11S -11P	.24 .17	.25 .19			.17	.22 .16	.24 .18			.19 .13		.13	.13
28-1S -1P	.29 .21	.31 .23			.21	.27 .20	.29 .22			.24 .16		.16	.16
28-4S -4P	.24 .19	.26 .20			.19	.22 .17	.24 .19			.19 .14		.14	.14
32-3S -3P	.38 .29	.42 .33			.29	.38 .29	.39 .30			.34 .25		.25	.25
<b>10 CONTACTS</b>													
18-1S -1P	.10 .08	.12 .10	.15 .13	.15 .13	.09 .08	.10 .08	.11 .09	.14 .12	.14 .12	.08 .06	.11 .09	.07 .06	.06
†18-19S † -19P	.10 .08	.12 .10				.10 .08	.11 .09			.08 .06			.06
***†18-23S ***† -23P	LIKE 18-1 ROTATED 100° RIGHT												
***†18-24S ***† -24P	LIKE 18-1 ROTATED 250° RIGHT												
24-21S -21P	.19 .16	.21 .18				.18 .15	.19 .16			.14 .11		.11	
28-19S -19P	.24 .19	.26 .21			.23 .19	.22 .17	.25 .19			.19 .14		.18 .14	.14
<b>11 CONTACTS</b>													
20-33S -33P	.13 .11	.14 .12			.12	.12 .10	.12 .10			.09 .07		.08	
24-20S -20P	.19 .15	.20 .17	.13 .10	.24 .20		.17 .14	.19 .16	.13 .09	.23 .19	.14 .10	.13 .09	.13 .10	

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

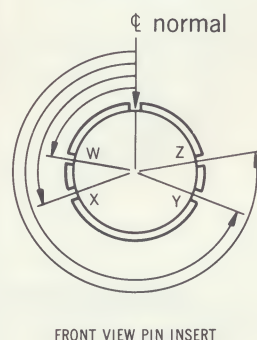
\*\*Consult factory for availability.

‡ #20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

- ① Contact J has D serv. rating. Balance have A serv. rating.
- ② Contacts A, J & E have D serv. rating. Balance have A serv. rating.
- ③ Contact G, P & S have E serv. rating. Balance have D serv. rating.
- ④ Contacts B, C, F & G have A serv. rating. Balance have INST. serv. rating.
- ⑤ Contacts H & M have B serv. rating. Contacts A & B have D serv. rating. Balance have A serv. rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS										PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
9 CONTACTS (Continued)																		
W-80 Y-250 Z-280	⅛ ⅙	①			1		8		.17 .14	.18 .16				.17 .14	.18 .16	.27 .24	.22 .19	22-27S -27P
W-35 X-110 Y-250 Z-325	⅙	A			3	6			.26 .20	.27 .21				.26 .20	.27 .21	.43 .36	.32 .26	24-11S -11P
W-80 X-110 Y-250 Z-280	⅛ ⅙	②			3	6			.30 .23	.32 .25				.30 .23	.32 .25	.44 .37	.36 .29	28-1S -1P
W-80 X-110 Y-250 Z-280	⅛ ⅜	③				2	7		.25 .20	.27 .22				.25 .20	.27 .22	.40 .34	.31 .26	28-4S -4P
W-80 X-110 Y-250 Z-280	⅛	D	1	2		2	4		.41 .32	.43 .34						.64 .55	.50 .41	32-3S -3P
10 CONTACTS																		
W-70 X-145 Y-215 Z-290	⅙	④					10		.11 .10	.13 .12	.16 .15	.17 .15		.11 .10	.13 .12	.16 .14	.15 .13	18-1S -1P
X-120 Y-240	⅙	A					8	2†	.11 .10	.13 .12				.11 .10	.13 .12	.16 .14	.15 .13	†18-19S † -19P
																		***†18-23S ***† -23P
																		***†18-24S ***† -24P
W-80 X-110 Y-250 Z-280	⅛	D			1		9		.21 .18	.23 .20				.21 .18	.23 .20	.38 .35	.27 .24	24-21S -21P
W-80 X-110 Y-250 Z-280	¼ ⅛ ⅙	⑤				4	6		.26 .20	.28 .23				.26 .20	.28 .23	.40 .35	.32 .27	28-19S -19P
11 CONTACTS																		
	⅙	A					11		.14 .12	.18 .16				.18 .16	.18 .16	.23 .21	.18 .16	20-33S -33P
W-80 X-110 Y-250 Z-280	⅛	D				2	9		.21 .17	.22 .19	.14 .10	.26 .22		.21 .17	.22 .19	.38 .46	.27 .23	24-20S -20P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

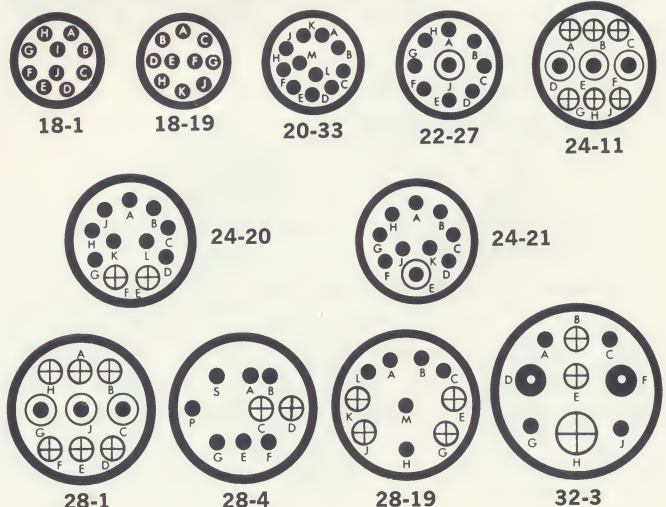


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

For complete information on how to order variations from standard constructions, see page 7.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
11 CONTACTS (Continued)													
28-14S -14P	.23 .19	.26 .21			.22 .19	.22 .17	.24 .19			.18 .14		.17 .14	
12 CONTACTS													
†24-19S † -19P	.18 .15	.20 .17				.17 .14	.19 .16			.13 .11		.12	
28-8S -8P	.23 .19	.25 .21			.22	.22 .17	.24 .20			.18 .14		.17	
28-9S -9P	.25 .20	.27 .22			.24 .20	.24 .19	.26 .20			.20 .15		.19 .15	.15
28-18S -18P	.23 .19	.25 .21			.22	.22 .17	.24 .19			.18 .14			
32-101S -101P	.30 .24	.34 .27				.30 .23	.35 .29			.26 .20			
13 CONTACTS													
†20-11S † -11P	.14 .11	.15 .12			.13	.13 .10	.15 .12			.11 .08		.10	
***†20-25S ***† -25P	LIKE 20-11 ROTATED 100° RIGHT												
14 CONTACTS													
20-27S -27P	.13 .12	.14 .13	.10 .07	.19 .16	.12 .12	.12 .11	.12 .11	.10 .07	.18 .15	.10 .08	.10 .07	.09 .08	.08
22-19S -19P	.15 .13	.16 .15	.11 .08		.14 .13	.14 .12	.15 .14	.11 .08		.11 .10	.11 .08	.10 .10	.10

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

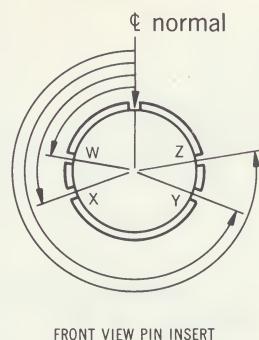
\*\*Consult factory for availability.

†‡#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

- ① Contacts L & M have E serv. rating. Contact B has D serv. rating. Balance have A serv. rating.
- ② Contact M has C serv. rating. Contacts A & B has A serv. rating. Contacts C, D, E & F have INST. serv. rating. Balance have D serv. rating.
- ③ Contacts A & E have C serv. rating. Contacts B & H are COAX. Balance have D serv. rating.
- ④ Contacts E, F, J, L, M & N have A serv. rating. Balance have INST. serv. rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
11 CONTACTS (Continued)																	
W-80 X-110 Y-250 Z-280	1/8	D				11			.25 .20	.27 .22			.25 .20	.27 .22	.39 .34	.31 .26	28-14S -14P
12 CONTACTS																	
	1/16						12		.20 .17	.22 .19					.37 .34	.36 .24	†24-19S † -19P
W-80 X-110 Y-250 Z-280	1/16 1/8 3/16	①				2	10		.25 .21	.27 .23			.25 .21	.27 .23	.39 .35	.31 .27	28-8S -8P
W-80 X-110 Y-250 Z-280	1/8	D				6	6		.27 .21	.29 .23			.27 .21	.29 .23	.41 .35	.33 .27	28-9S -9P
W-70 X-145 Y-215 Z-290	5/16 1/8 1/16	②					12		.25 .20	.27 .22			.25 .20	.27 .22	.39 .34	.31 .26	28-18S -18P
W-65 X-125 Y-225 Z-310	5/16 1/8	TWO COAX CONTACTS ③							.33 .26	.35 .28					.56 .50	.42 .36	32-101S -101P
13 CONTACTS																	
		INST.					3	10†	.15 .12	.17 .14			.15 .12	.17 .14	.25 .22	.20 .17	†20-11S † -11P
																	***†20-25S ***† -25P
14 CONTACTS																	
W-35 X-110 Y-250 Z-325	1/16	④					14		.14 .13	.16 .14	.11 .08	.20 .17	.14 .13	.16 .14	.24 .22	.19 .17	20-27S -27P
W-80 X-110 Y-250 Z-280	1/16	A					14		.16 .15	.18 .16	.11 .08		.16 .15	.18 .16	.26 .24	.21 .19	22-19S -19P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)



20-11



20-27



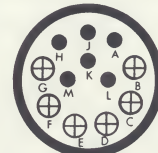
22-19



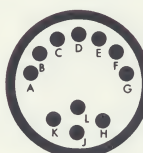
24-19



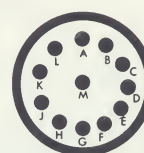
28-8



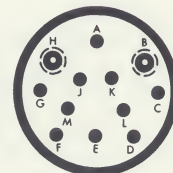
28-9



28-14



28-18



32-101

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
9 CONTACTS (Continued)																		
W-80 Y-250 Z-280	⅛ ⅙	①			1		8		.17 .14	.18 .16			.17 .14	.18 .16	.27 .24	.22 .19	22-27S -27P	
W-35 X-110 Y-250 Z-325	⅙	A			3	6			.26 .20	.27 .21			.26 .20	.27 .21	.43 .36	.32 .26	24-11S -11P	
W-80 X-110 Y-250 Z-280	⅛ ⅙	②			3	6			.30 .23	.32 .25			.30 .23	.32 .25	.44 .37	.36 .29	28-1S -1P	
W-80 X-110 Y-250 Z-280	⅛ ⅔	③				2	7		.25 .20	.27 .22			.25 .20	.27 .22	.40 .34	.31 .26	28-4S -4P	
W-80 X-110 Y-250 Z-280	⅛	D	1	2		2	4		.41 .32	.43 .34					.64 .55	.50 .41	32-3S -3P	
10 CONTACTS																		
W-70 X-145 Y-215 Z-290	⅙	④					10		.11 .10	.13 .12	.16 .15	.17 .15	.11 .10	.13 .12	.16 .14	.15 .13	18-1S -1P	
X-120 Y-240	⅙	A					8	2†	.11 .10	.13 .12			.11 .10	.13 .12	.16 .14	.15 .13	†18-19S † -19P	
																	***†18-23S ***† -23P	
																	***†18-24S ***† -24P	
W-80 X-110 Y-250 Z-280	⅛	D			1		9		.21 .18	.23 .20			.21 .18	.23 .20	.38 .35	.27 .24	24-21S -21P	
W-80 X-110 Y-250 Z-280	¼ ⅛ ⅙	⑤				4	6		.26 .20	.28 .23			.26 .20	.28 .23	.40 .35	.32 .27	28-19S -19P	
11 CONTACTS																		
	⅙	A					11		.14 .12	.18 .16			.18 .16	.18 .16	.23 .21	.18 .16	20-33S -33P	
W-80 X-110 Y-250 Z-280	⅛	D				2	9		.21 .17	.22 .19	.14 .10	.26 .22	.21 .17	.22 .19	.38 .46	.27 .23	24-20S -20P	

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

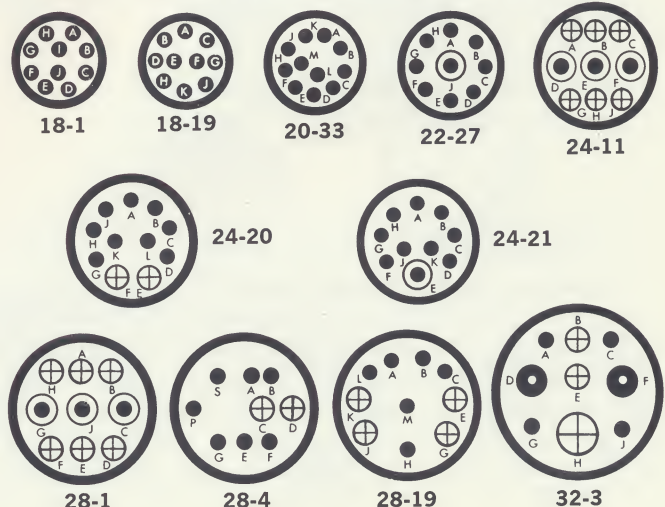


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	3/16"	1"
Mechanical Spacing (nom.)	1/16"	1/8"	3/16"	1/4"	3/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS										PLUGS (Figures give weight of available plugs in pounds.)										INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS					
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell				
11 CONTACTS (Continued)																				
W-80 X-110 Y-250 Z-280	1/8	D				11			.25 .20	.27 .22			.25 .20	.27 .22	.39 .34	.31 .26	28-14S -14P			
12 CONTACTS																				
	1/16					12			.20 .17	.22 .19					.37 .34	.36 .24	†24-19S † -19P			
W-80 X-110 Y-250 Z-280	1/16 1/8 3/16	①				2	10		.25 .21	.27 .23			.25 .21	.27 .23	.39 .35	.31 .27	28-8S -8P			
W-80 X-110 Y-250 Z-280	1/8	D				6	6		.27 .21	.29 .23			.27 .21	.29 .23	.41 .35	.33 .27	28-9S -9P			
W-70 X-145 Y-215 Z-290	5/16 1/8 1/16	②					12		.25 .20	.27 .22			.25 .20	.27 .22	.39 .34	.31 .26	28-18S -18P			
W-65 X-125 Y-225 Z-310	5/16 1/8	TWO COAX CONTACTS ③							.33 .26	.35 .28					.56 .50	.42 .36	32-101S -101P			
13 CONTACTS																				
		INST.				3	10†		.15 .12	.17 .14			.15 .12	.17 .14	.25 .22	.20 .17	†20-11S † -11P			
																	***†20-25S ***† -25P			
14 CONTACTS																				
W-35 X-110 Y-250 Z-325	1/16	④					14		.14 .13	.16 .14	.11 .08	.20 .17	.14 .13	.16 .14	.24 .22	.19 .17	20-27S -27P			
W-80 X-110 Y-250 Z-280	1/16	A					14		.16 .15	.18 .16	.11 .08		.16 .15	.18 .16	.26 .24	.21 .19	22-19S -19P			

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)



20-11



20-27



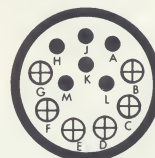
22-19



24-19



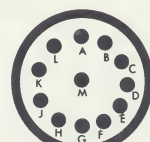
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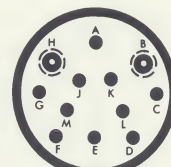
28-9



28-14



28-18



32-101

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250 AC RMS 200	700 500	1250 900	1750 1250	2450 1750	4200 3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
<b>14 CONTACTS (Continued)</b>													
28-2S -2P	.24 .19	.26 .21	.18 .13		.19	.22 .18	.24 .20	.18 .13		.19 .14	.18 .13	.14	.14
28-20S -20P	.27 .21	.29 .23	.34 .30	.34 .30	.21	.25 .19	.28 .21	.33 .29	.33 .29	.22 .16	.34 .30	.16	.16
†32-4S † -4P	.30 .23	.34 .27				.30 .23	.31 .24			.26 .19			
32-9S -9P	.34 .26	.38 .29				.34 .25	.35 .27			.31 .22			
**†32-18S **† -18P	LIKE 32-4 ROTATED 100° RIGHT												
32-102S -102P	.29 .23	.33 .27				.29 .33	.34 .28			.25 .20			
<b>15 CONTACTS</b>													
28-17S -17P	.23 .19	.25 .21			.22 .19	.22 .18	.24 .20			.18 .14		.17 .14	.14
†32-12S † -12P	.31 .24	.35 .28			.29	.31 .24	.36 .29			.28 .20		.27	
36-405S* -405P*	.51 .44	.52 .46				.48 .42	.49 .43			.43 .37			
36-407S* -407P*	.50 .43	.52 .45				.47 .41	.49 .42			.43 .36			
40-5S -5P	.72 .54	.72 .55				.68 .51	.69 .51			.64 .46			

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

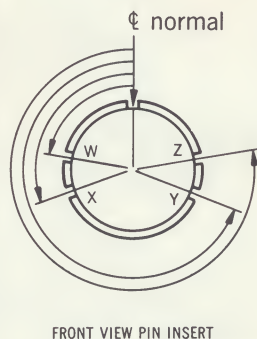
\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

- ① Contacts F, J, K & N have A serv. rating. Balance have D serv. rating.
- ② Contacts C, G, H, J, M & N have A serv. rating. Contact E has C serv. rating. Contact D is COAX. Bal. have D serv. rating.
- ③ Contact R has B serv. rating. Contact M, N & P have D serv. rating. Bal. have A serv. rating.
- ④ Contacts C, D, E, F & G have A serv. rating. Balance have D serv. rating.
- ⑤ **VOLTAGE BREAKDOWNS:** 15,000 V. RMS between "A" and nearest contacts; 9,000 V. RMS between High Voltage Contacts; 5,000 V. RMS to ground; 5,000 V. RMS between small contacts.

### ALTERNATE INSERT POSITIONS



FRONT VIEW PIN INSERT

### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell	
14 CONTACTS (Continued)																	
W-35 X-110 Y-250 Z-325	⅛	D				2	12		.25 .21	.27 .23	.18 .13		.25 .21	.27 .23	.40 .29	.32 .27	28-2S -2P
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub>	A				10	4		.29 .22	.31 .24	.35 .31	.35 .31	.29 .22	.31 .24	.43 .36	.35 .29	28-20S -20P
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub> ⅙ <sub>8</sub>	①				2	12		.33 .26	.35 .28					.56 .49	.42 .35	†32-4S † -4P
W-80 X-110 Y-250 Z-280	⅛	D		2			12		.37 .28	.39 .30					.60 .52	.46 .38	32-9S -9P
																	**†32-18S **† -18P
W-65 X-125 Y-225 Z-310	⅝ <sub>16</sub> ⅙ <sub>8</sub> ⅙ <sub>16</sub>	ONE COAX CONTACT ②						13	.32 .26	.34 .28					.55 .49	.41 .35	32-102S -102P
15 CONTACTS																	
W-80 X-110 Y-250 Z-280	¼ ⅙ <sub>8</sub> ⅙ <sub>16</sub>	③						15	.25 .21	.27 .23			.25 .21	.27 .23	.39 .35	.31 .27	28-17S -17P
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub> ⅙ <sub>8</sub>	④					5	10	.34 .27	.36 .29					.57 .50	.43 .36	†32-12S † -12P
		⑤	HIGH VOLTAGE HIGH VOLTAGE						.50 .44	.52 .46					.73 .67	.62 .55	36-405S* -405P*
		⑥	HIGH VOLTAGE HIGH VOLTAGE						.50 .43	.51 .45					.72 .66	.61 .55	36-407S* -407P*
W-80 X-110 Y-250 Z-280	⅙ <sub>16</sub>	A	3	2	4	6			.71 .54	.63 .56						.85 .67	40-5S -5P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

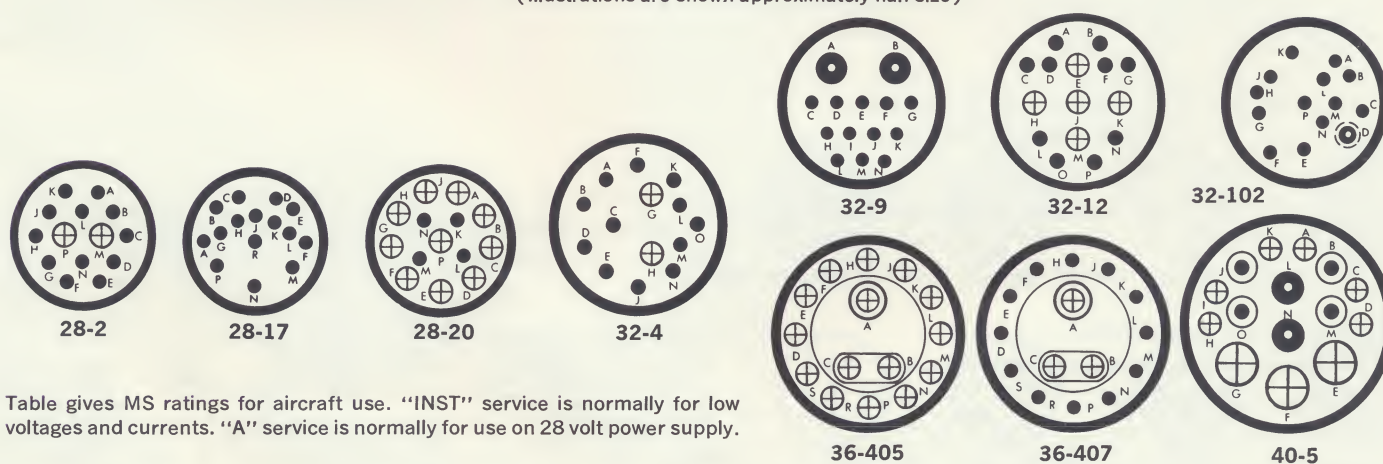


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)			1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS							
Contact size:	20	16	12	8	4	0	
Amperes:	10	22	41	73	135	245	

# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
15 CONTACTS (Continued)													
**48-1S ** -1P													
16 CONTACTS													
24-5S -5P	.18 .16	.20 .18	.13 .10		.16 .16	.17 .15	.19 .16	.12 .10		.14 .11	.13 .10	.13 .11	.11
24-7S -7P	.19 .16	.21 .18			.17 .16	.18 .15	.20 .17			.14 .12		.13 .12	.12
**†24-15S **† -15P	LIKE 24-5 ROTATED 100° RIGHT												
**†24-24S **† -24P	LIKE 24-5 ROTATED 250° RIGHT												
36-14S -14P	.46 .34	.49 .37				.44 .32	.46 .34			.40 .28		.28	
17 CONTACTS													
20-29S -29P	.14 .12	.15 .13	.11 .08	.19 .16	.13 .12	.13 .11	.14 .12	.11 .07	.18 .15	.11 .09	.11 .07	.10 .09	.09
36-13S -13P	.40 .31	.42 .33				.37 .29	.39 .40			.33 .24			
19 CONTACTS													
22-14S -14P	.15 .14	.17 .15	.12 .09	.21 .17	.14 .14	.14 .13	.15 .14	.12 .09	.20 .16	.11 .10	.12 .09	.10 .10	.10
†22-30S † -30P	LIKE 22-14 ROTATED 260° RIGHT												
20 CONTACTS													
†28-16S † -16P	.24 .20	.26 .20	.18 .14		.22 .20	.22 .18	.24 .21	.18 .13		.19 .15	.18 .13	.17 .15	.15

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

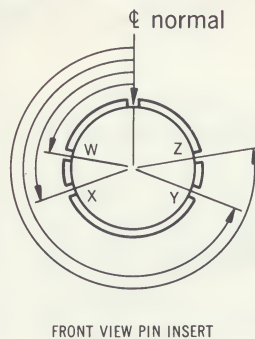
†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contacts B & N have E serv. rating. Balance have D serv. rating.

② Contacts N, P & Q have E serv. rating. Balance have A serv. rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
15 CONTACTS (Continued)																	
W-65 X-125 Y-225 Z-310	1/8 3/16	①	3	2	4	6											**48-1S ** -1P
16 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A					16		.20 .18	.22 .19	.13 .10		.20 .18	.22 .19	.37 .35	.27 .24	24-5S -5P
W-80 X-110 Y-250 Z-280	1/16	A				2	14		.21 .18	.23 .20			.21 .18	.23 .20	.38 .35	.27 .24	24-7S -7P
																	**†24-15S **† -15P
																	**†24-24S **† -24P
W-90 X-180 Y-270	1/8	D			5	5	6		.46 .34	.48 .36					.68 .56	.58 .46	36-14S -14P
17 CONTACTS																	
W-80 Z-280	1/16	A					17		.15 .13	.17 .15	.11 .08	.20 .17	.15 .13	.17 .15	.25 .23	.20 .18	20-29S -29P
W-80 X-110 Y-250 Z-280	3/16 1/16	②				2	15		.40 .31	.41 .32					.61 .53	.51 .42	36-13S -13P
19 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A					19		.16 .15	.18 .17	.13 .09	.23 .20	.16 .15	.18 .17	.26 .25	.21 .20	22-14S -14P
																	†22-30S † -30P
20 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A					20		.25 .22	.27 .24	.19 .14		.25 .22	.27 .24	.39 .36	.31 .28	†28-16S † -16P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

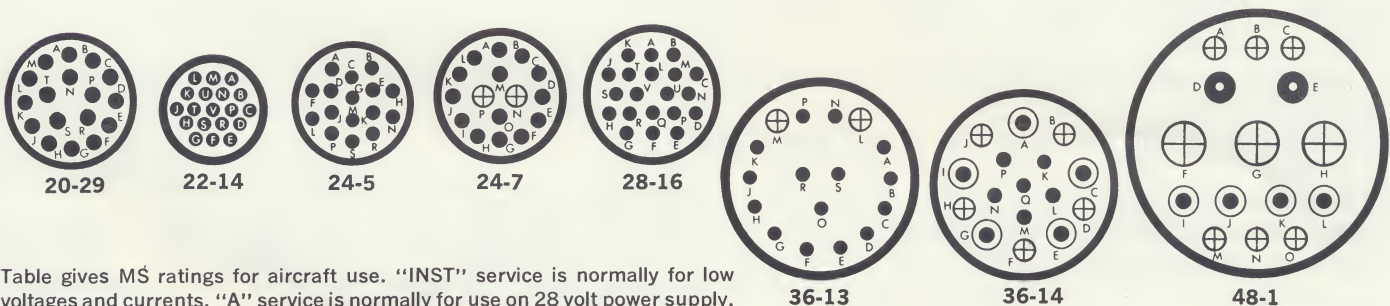


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1⁄16"	1⁄8"	3⁄16"	1⁄4"	5⁄16"	1"
Mechanical Spacing (nom.)			1⁄16"	1⁄8"	3⁄16"	1⁄4"	5⁄16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS							
Contact size:	20	16	12	8	4	0	
Amperes:	10	22	41	73	135	245	

# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

## RECEPTACLES (Figures give weight of available receptacles in pounds.)

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-0R E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
22 CONTACTS													
28-11S -11P	.25 .21	.27 .23	.21 .15	.34 .28	.25 .21	.24 .19	.26 .22	.20 .14	.33 .27	.20 .16	.20 .14	.18 .16	.16
†36-1S † -1P	.41 .31	.43 .34			.31	.39 .29	.40 .31			.34 .25		.25	.25
**40-7S ** -7P													
23 CONTACTS													
32-6S -6P	.39 .29	.43 .33				.38 .29	.40 .30			.35 .26		.26	.26
32-13S -13P	.32 .25	.35 .29			.30 .25	.31 .25	.33 .26			.28 .21		.26 .21	.18
**†32-16S **† -16P	LIKE 32-6 ROTATED 100° RIGHT												
**†32-20S **† -20P	LIKE 32-6 ROTATED 100° LEFT												
40-2S -2P	.48 .38	.49 .39				.45 .35	.46 .35			.41 .30		.39	
**40-3S ** -3P													
**40-4S ** -4P													
**†40-13S **† -13P	LIKE 40-2 ROTATED 100° RIGHT												

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

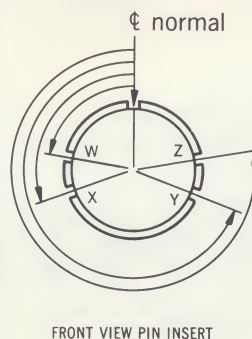
†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contacts P, Q, U, V, W & X have A serv. rating. Balance have D serv. rating.

② Contacts A, B, C, D & E have B serv. rating. Balance have D serv. rating.

### ALTERNATE INSERT POSITIONS



### CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
22 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A				4	18		.27 .23	.29 .25	.21 .15	.36 .29	.27 .23	.29 .25	.41 .37	.33 .29	28-11S -11P
W-80 X-110 Y-250 Z-280	1/8	D				4	18		.41 .31	.43 .33					.63 .53	.52 .43	†36-1S † -1P
W-80 X-110 Y-250 Z-280	1/8 1/16	①	2		2	2	16									.68 .59	**40-7S ** -7P
23 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A		2	3	2	16		.41 .32	.43 .34					.65 .55	.51 .41	32-6S -6P
W-80 X-110 Y-250 Z-280	1/8	D				5	18		.34 .28	.36 .30					.58 .51	.44 .37	32-13S -13P
																	**†32-16S **† -16P
																	**†32-20S **† -20P
W-80 X-110 Y-250 Z-280	1/4 1/8	②					23		.48 .38	.50 .39						.61 .51	40-2S -2P
W-80 X-110 Y-250 Z-280	1/8	D		1		4	18									.64 .53	**40-3S ** -3P
W-80 X-110 Y-250 Z-280	1/8	D		2	3	2	16									.70 .56	**40-4S ** -4P
																	**†40-13S **† -13P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

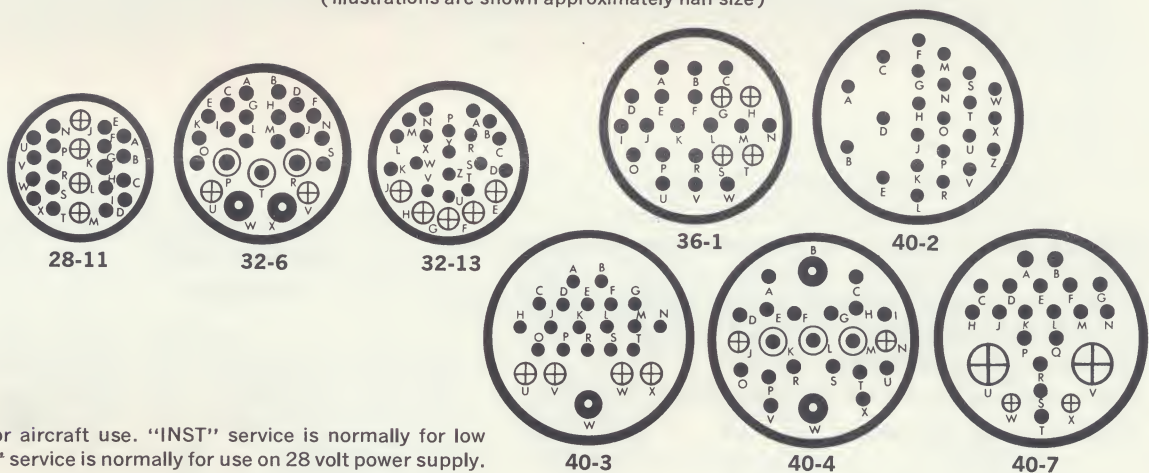


Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C	
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1⁄16"	1⁄8"	3⁄16"	1⁄4"	5⁄16"	1"
Mechanical Spacing (nom.)		1⁄16"	1⁄8"	3⁄16"	1⁄4"	5⁄16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

CURRENT RATINGS						
Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A-Solid Shell	97-3100B-Split Shell	MS3100R-E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C-Pres-surized	MS3101A-Solid Shell	97-3101B-Split Shell	MS3101R-E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A-Solid Shell	MS3102R-E & R Env. Resis.	MS3102C-Pres-surized	97-3102-Expl. Proof
<b>24 CONTACTS</b>													
24-28S -28P	.19 .17	.20 .19	.15 .11	.25 .21	.19 .17	.18 .16	.19 .19	.14 .11	.24 .20	.14 .12	.14 .11	.12 .12	.12
<b>25 CONTACTS</b>													
40-11S -11P	.57 .45	.58 .45				.54 .41	.55 .42			.50 .37			
<b>26 CONTACTS</b>													
28-12S -12P	.24 .21	.26 .23	.20 .15	.34 .29	.22 .21	.22 .19	.25 .22	.19 .14	.33 .28	.19 .16	.19 .14	.17 .16	.16
†28-13S † -13P	LIKE 28-12 ROTATED 100° RIGHT												
**40-6S ** -6P													
<b>29 CONTACTS</b>													
40-10S -10P	.69 .49	.70 .50				.66 .46	.66 .46			.61 .41			
<b>30 CONTACTS</b>													
†32-8S † -8P	.32 .26	.36 .30				.32 .26	.34 .27			.29 .23		.27 .23	.23
40-1S -1P	.50 .40	.51 .41			.47 .40§	.47 .37	.48 .37			.43 .32		.41 .32§	.32
<b>31 CONTACTS</b>													
36-9S 9P	.50 .38	.43 .40			.38	.47 .35	.49 .38			.43 .31		.31	.31
**†36-18S **† -18P	LIKE 36-9 ROTATED 100° RIGHT												
**†36-21S **† -21P	LIKE 36-9 ROTATED 100° LEFT												

† Inactive for new military design but available for replacement or non-military purposes.

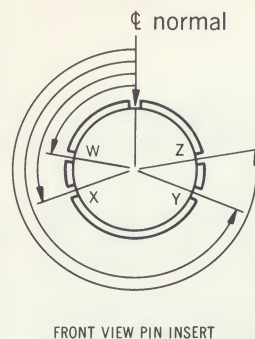
\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

‡#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

## ALTERNATE INSERT POSITIONS



## CODE OF WIRE SIZES





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

For complete information on how to order variations from standard constructions, see page 7.

INSERT SPECIFICATIONS									PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS			
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell	MS3108B- Split Shell		
24 CONTACTS																		
W-80 X-110 Y-250 Z-280	1/16	INST.					24		.21 .19	.22 .21	.15 .12	.27 .23	.21 .19	.22 .18	.38 .36	.27 .25	24-28S -28P	
25 CONTACTS																		
W-80 X-110 Y-250 Z-280	1/8	D	1	1	1	4	18		.57 .44	.59 .46						.70 .58	40-11S -11P	
26 CONTACTS																		
W-90 X-180 Y-270	1/16	A					26		.26 .23	.28 .25	.20 .15	.35 .30	.26 .23	.28 .25	.40 .37	.32 .29	28-12S -12P	
																	†28-13S † -13P	
W-80 X-110 Y-250 Z-280	1/8	D	1				1 24									.64 .55	**40-6S ** -6P	
29 CONTACTS																		
W-65 X-125 Y-225 Z-310	1/16	A		4	9		16		.68 .48	.71 .50						.82 .62	40-10S -10P	
30 CONTACTS																		
W-80 X-125 Y-235 Z-280	1/16	A					6 24		.35 .29	.37 .31					.59 .52	.44 .38	†32-8S † -8P	
W-65 X-130 Y-235 Z-300	1/8	D					6 24		.50 .40	.52 .41						.63 .53	40-1S -1P	
31 CONTACTS																		
W-80 X-125 Y-235 Z-280	1/16	A		1	2	14	14		.50 .38	.51 .39					.71 .59	.61 .49	36-9S -9P	
																	**†36-18S **† -18P	
																	**†36-21S **† -21P	

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

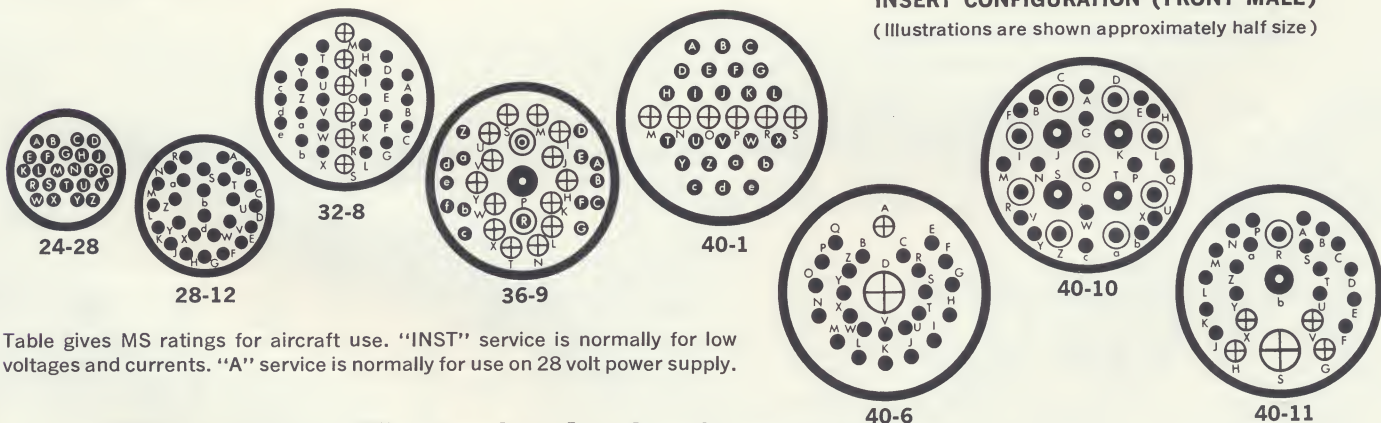


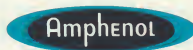
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250	700	1250	1750	2450	4200
	AC RMS 200	500	900	1250	1750	3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E. & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
31 CONTACTS (Continued)													
**44-2S **-2P													.40
**44-3S **-3P													
35 CONTACTS													
†28-15S †-15P	.25 .18	.27 .20	.36 .19		.24 .18	.23 .15	.25 .19	.36 .19		.20 .13	.36 .19	.19 .13	.13
32-7S -7P	.33 .27	.37 .31	.30 .21	.45 .36	.34 .27	.33 .27	.34 .28		.44 .35	.29 .24	.30 .20	.27 .24	.24
36-15S -15P	.40 .34	.42 .36				.37 .31	.39 .33			.38 .27		.35	
37 CONTACTS													
28-21S -21P	.25 .23	.27 .25	.22 .17	.36 .30	.24 .23	.23 .21	.25 .23	.22 .17	.35 .29	.20 .18	.21 .16	.18 .16	.18
*36-406S *-406P	.52 .39	.54 .41				.50 .37	.51 .38			.45 .32			
41 CONTACTS													
44-4S -4P	.68 .56	.68 .56				.64 .52	.64 .53			.57 .45			
42 CONTACTS													
44-1S -1P	.60 .48	.61 .49				.57 .45	.57 .45			.50 .37		.47 .37	.37
**†44-5S **†-5P	LIKE 44-1 ROTATED 100° RIGHT												
**†44-6S **†-6P	LIKE 44-1 ROTATED 100° LEFT												

† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

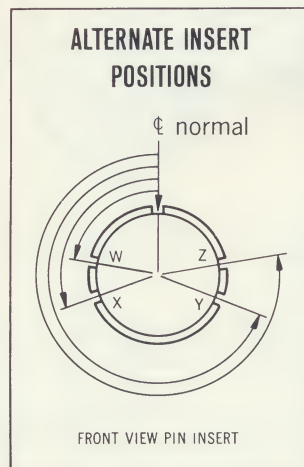
\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.

① Contacts A, B, H & J have INST. serv. rating. Balance have A serv. rating.

② Contact M has D serv. rating. Balance have A serv. rating.





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
31 CONTACTS (Continued)																	
W-65 X-125 Y-225 Z-310	1/8	D		1	2	14	14									.85 .69	**44-2S ** -2P
W-65 X-125 Y-225 Z-310	1/8	D		2	2	3	24									.85 .69	**44-3S ** -3P
35 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A					35		.26 .20	.28 .22	.36 .19		.26 .20	.28 .22	.40 .34	.32 .26	†28-15S † -15P
W-80 X-125 Y-235 Z-280	1/16	①				7	28		.36 .30	.38 .32	.30 .21	.46 .37			.59 .53	.45 .39	32-7S -7P
W-60 X-125 Y-245 Z-305	1/16 1/8	②					35		.40 .34	.41 .35					.61 .55	.51 .45	36-15S -15P
37 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A					37		.26 .24	.28 .26	.22 .17	.37 .31	.26 .24	.28 .26	.40 .38	.32 .30	28-21S -21P
	1/16	A		1	2	18	16		.52 .39	.54 .41					.75 .62	.64 .50	*36-406S * -406P
41 CONTACTS																	
W-65 X-125 Y-225 Z-310	1/8	D	2			8	31		.71 .59	.71 .59						.87 .75	44-4S -4P
42 CONTACTS																	
W-65 X-125 Y-225 Z-310	1/8	D				6	36		.63 .51	.71 .59						.79 .67	44-1S -1P
																	**†44-5S **† -5P
																	**†44-6S **† -6P

## INSERT CONFIGURATION (FRONT MALE)

(Illustrations are shown approximately half size)

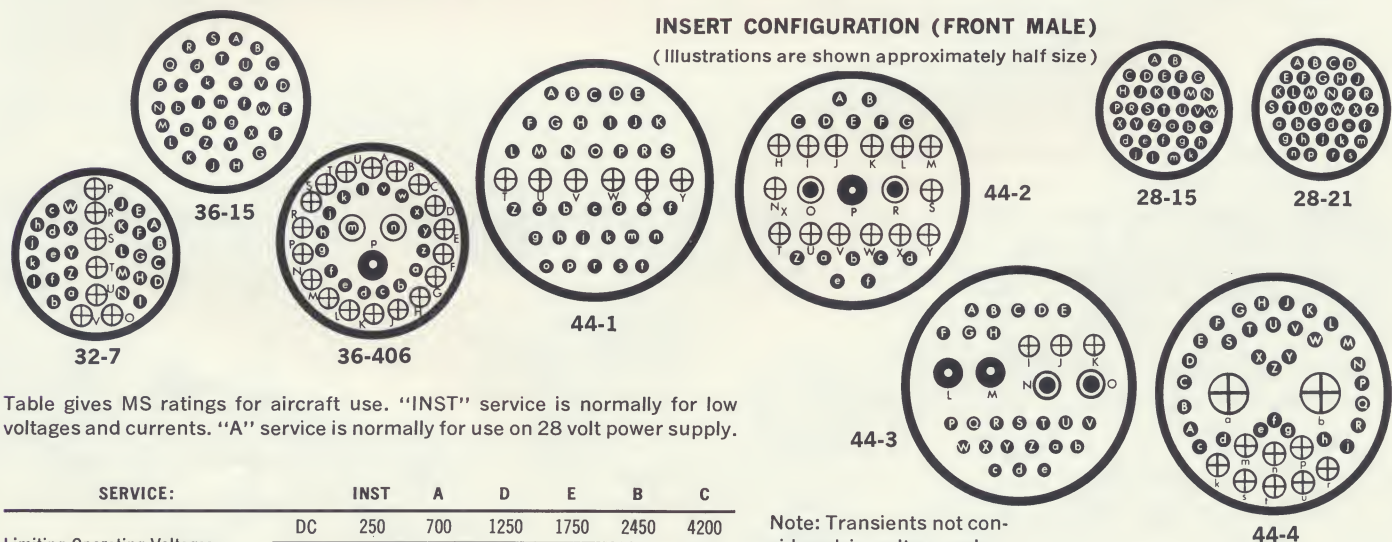


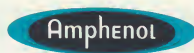
Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:		INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC	250	700	1250	1750	2450	4200
	AC RMS	200	500	900	1250	1750	3000
Effective Creepage (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"	

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245



# MS CONNECTOR AVAILABILITY—Receptacles

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

For complete information on how to order variations from standard constructions, see page 7.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

INSERT NUMBER	RECEPTACLES (Figures give weight of available receptacles in pounds.)												
	WALL RECEPTACLES					CABLE RECEPTACLES				BOX RECEPTACLES			
	MS3100A- Solid Shell	97-3100B- Split Shell	MS3100R- E & R Env. Resis.	69-OR E & R Poke Home®	MS3100C- Pres- surized	MS3101A- Solid Shell	97-3101B- Split Shell	MS3101R- E & R Env. Resis.	69-1R E & R Poke Home®	MS3102A- Solid Shell	MS3102R- E & R Env. Resis.	MS3102C- Pres- surized	97-3102- Expl. Proof
47 CONTACTS													
36-7S -7P	.44 .37	.46 .39			.41 .37	.41 .34	.43 .36			.37 .30		.34 .30	.30
36-8S -8P	.40 .36	.43 .38			.38 .36	.38 .33	.40 .35			.34 .29			.29
**†36-16S **† -16P	LIKE 36-7 ROTATED 100° RIGHT												
**†36-17S **† -17P	LIKE 36-7 ROTATED 100° LEFT												
40-9S -9P	.59 .46	.60 .44			.57 .46	.56 .43	.56 .41			.51 .38		.38	.38
48 CONTACTS													
36-10S -10P	.41 .36	.44 .38	.34 .25	.51 .42	.39 .34	.39 .34	.43 .35	.34 .25	.51 .40	.34 .29	.34 .25	.34 .25	
†36-11S † -11P	LIKE 36-10 ROTATED 100° RIGHT												
**†36-12S **† -12P	LIKE 36-10 ROTATED 100° LEFT												
52 CONTACTS													
*32-414S * -414P	.35 .29	.40 .33				.35 .29	.36 .30			.31 .26			
*36-403S * -403P	.40 .36	.42 .38				.37 .34	.39 .35			.33 .29			

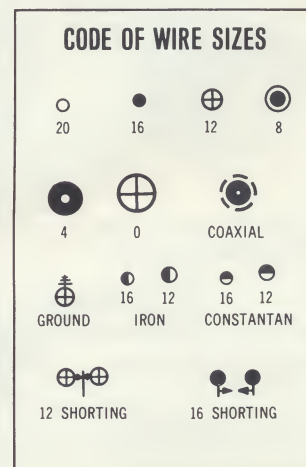
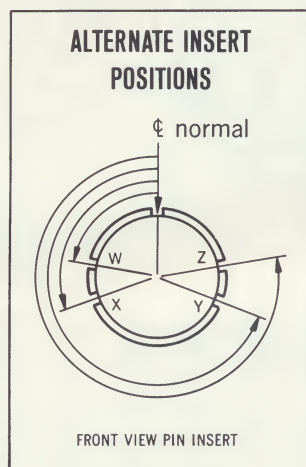
† Inactive for new military design but available for replacement or non-military purposes.

\* "MS" number not yet assigned. Use "97" prefix in place of "MS" in complete catalog number.

\*\*Consult factory for availability.

†#20 contacts are size #16 with #20 solder pockets.

§ Two piece male construction.





# Plugs—MS CONNECTOR AVAILABILITY

**HOW TO DETERMINE PART NUMBER TO ORDER:** Find the insert and shell combination you want. Then add the insert number to the shell number.

**EXAMPLE:** If you want a MS3100A-shell with a 22-29P insert, order MS3100A-22-29P.

For complete information on how to order variations from standard constructions, see page 7.

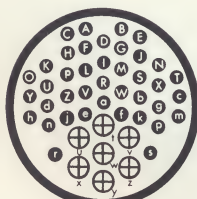
INSERT SPECIFICATIONS								PLUGS (Figures give weight of available plugs in pounds.)								INSERT NUMBER	
ALTERNATE INSERT POSITIONS (Degrees)	ME- CHAN- ICAL SPAC- ING	SERV- ICE RAT- ING	CONTACT SIZE						STRAIGHT PLUGS				QUICK DISCON- NECT PLUGS		ANGLE PLUGS		
			# 0	# 4	# 8	# 12	# 16	# 20	MS3106A- Solid Shell	MS3106B- Split Shell	MS3106R- E & R Env. Resis.	69-6R E & R Poke Home®	MS3107A- Solid Shell	MS3107B- Split Shell	MS3108A- Solid Shell		MS3108B- Split Shell
47 CONTACTS																	
W-80 X-110 Y-250 Z-280	1/16	A				7	40		.44 .37	.45 .38					.65 .58	.55 .48	36-7S -7P
W-80 X-110 Y-250 Z-280	1/16	A				1	46		.41 .36	.42 .35					.62 .57	.52 .47	36-8S -8P
																	**†36-16S **† -16P
																	**†36-17S **† -17P
W-65 X-125 Y-225 Z-310	1/16	A			1	22	24		.58 .46	.60 .45						.72 .59	40-9S -9P
48 CONTACTS																	
W-80 X-125 Y-235 Z-280	1/16	A					48		.41 .36	.43 .37	.34 .26	.52 .43			.63 .58	.53 .47	36-10S -10P
																	†36-11S † -11P
																	**†36-12S **† -12P
52 CONTACTS																	
	1/16	A					52		.38 .32	.40 .34					.64 .56	.48 .42	*32-414S * -414P
	1/16	A					52		.40 .36	.41 .38					.63 .59	.51 .47	*36-403S * -403P

## INSERT CONFIGURATION (FRONT MALE)

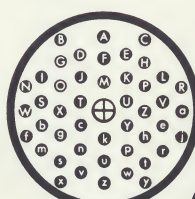
(Illustrations are shown approximately half size)



32-414



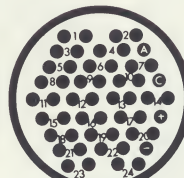
36-7



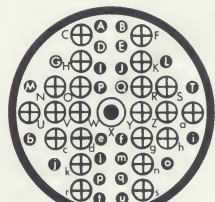
36-8



36-10



36-403



40-9

Table gives MS ratings for aircraft use. "INST" service is normally for low voltages and currents. "A" service is normally for use on 28 volt power supply.

SERVICE:	INST	A	D	E	B	C
Limiting Operating Voltages at Sea Level	DC 250 AC RMS 200	700 500	1250 900	1750 1250	2450 1750	4200 3000
Effective Creepage (nom.)	1/16"	1/8"	3/16"	1/4"	5/16"	1"
Mechanical Spacing (nom.)		1/16"	1/8"	3/16"	1/4"	5/16"

Note: Transients not considered in voltage calculations. Limiting operating voltages at 50,000 feet are approximately 25% of sea level values.

## CURRENT RATINGS

Contact size:	20	16	12	8	4	0
Amperes:	10	22	41	73	135	245

## Insert Index

The following is an index of the available MS inserts arranged in numerical sequence by shell size. For detailed information on contact sizes, mechanical spacing, service ratings, configuration, and MS connectors in which these inserts are available, see the page indicated.

Insert Number	Total Contacts	Page No.	Insert Number	Total Contacts	Page No.	Insert Number	Total Contacts	Page No.	Insert Number	Total Contacts	Page No.
8S-1	1	24	18-25	2	26	22-29	7	40	32-3	9	46
10S-2	1	24	18-26	2	26	22-30	19	52	32-4	14	50
10SL-3	3	28	18-27	3	30	22-32	6	40	32-5	2	28
10SL-4	2	26	18-28	3	30	22-33	7	40	32-6	23	54
12S-1	2	26	18-29	5	36	22-34	5	36	32-7	35	58
12S-2	2	26	18-30	5	36	22-36	8	44	32-8	30	56
12S-3	2	26	18-31	5	36	22-404	8	44	32-9	14	50
12S-4	1	24	18-404	2	26	24-1	2	28	32-10	7	42
12-5	1	24	18-420	1	24	24-2	7	42	32-12	15	50
12S-6	2	26	20-2	1	24	24-3	7	42	32-13	23	54
12SL-844	4	32	20-3	3	30	24-4	4	34	32-15	8	44
14S-1	3	28	20-4	4	34	24-5	16	52	32-16	23	54
14S-2	4	32	20-5	2	28	24-6	8	44	32-17	4	36
14-3	1	24	20-6	3	30	24-7	16	52	32-18	14	50
14S-4	1	24	20-7	8	42	24-9	2	28	32-19	5	38
14S-5	5	36	20-8	6	38	24-10	7	42	32-20	23	54
14S-6	6	38	20-9	8	32	24-11	9	46	32-101	12	48
14S-7	3	28	20-11	13	48	24-12	5	36	32-102	14	48
14S-9	2	26	20-12	2	28	24-14	3	32	32-414	52	60
14S-10	4	32	20-14	5	36	24-15	16	52	36-1	22	54
14S-11	4	32	20-15	7	40	24-16	7	42	36-2	5	38
14S-12	3	30	20-16	9	44	24-17	5	38	36-3	6	40
14S-13	3	30	20-17	6	38	24-19	12	48	36-4	3	32
16S-1	7	40	20-18	9	44	24-20	11	46	36-5	4	36
16-2	1	24	20-19	3	30	24-21	10	46	36-6	6	40
16S-3	1	24	20-20	4	34	24-22	4	34	36-7	47	60
16S-4	2	26	20-21	9	34	24-23	5	38	36-8	47	60
16S-5	3	30	20-22	6	38	24-24	16	52	36-9	31	56
16S-6	3	30	20-23	2	28	24-25	8	44	36-10	48	60
16-7	3	30	20-24	4	34	24-26	8	44	36-11	48	60
16S-8	5	36	20-25	13	48	24-27	7	42	36-12	48	60
16-9	4	32	20-27	14	48	24-28	24	56	36-13	17	52
16-10	3	30	20-29	17	52	24-835	1	24	36-14	16	52
16-11	2	26	20-33	11	46	24-865	6	40	36-15	35	58
16-12	1	24	22-1	2	28	28-1	9	46	36-16	47	60
16-13	2	26	22-2	3	30	28-2	14	50	36-17	47	60
16S-14	3	30	22-3	2	28	28-3	3	32	36-18	31	56
16S-15	2	26	22-4	4	34	28-4	9	46	36-21	31	56
16S-16	2	26	22-5	6	38	28-5	5	38	36-403	52	60
16S-17	3	30	22-6	3	32	28-6	3	32	36-405	15	50
18-1	10	46	22-7	1	24	28-7	2	28	36-406	37	58
18-3	2	26	22-8	2	28	28-8	12	48	36-407	15	50
18-4	4	34	22-9	3	32	28-9	12	48	36-853	7	42
18-5	3	30	22-10	4	34	28-10	7	42	40-1	30	56
18-6	1	24	22-11	2	28	28-11	22	54	40-2	23	54
18-7	1	24	22-12	5	36	28-12	26	56	40-3	23	54
18-8	8	42	22-13	5	36	28-13	26	56	40-4	23	54
18-9	7	40	22-14	19	52	28-14	11	48	40-5	15	50
18-10	4	34	22-15	6	38	28-15	35	58	40-6	26	56
18-11	5	36	22-16	9	44	28-16	20	52	40-7	22	54
18-12	6	38	22-17	9	44	28-17	15	50	40-9	41	60
18-13	4	34	22-18	8	44	28-18	12	48	40-10	29	56
18-14	2	26	22-19	14	48	28-19	10	46	40-11	25	56
18-15	4	34	22-20	9	44	28-20	14	50	40-13	23	54
18-16	1	24	22-21	3	32	28-21	37	58	44-1	42	58
18-17	7	40	22-22	4	34	28-22	6	40	44-2	31	58
18-18	7	40	22-23	8	44	28-410	4	34	44-3	31	58
18-19	10	46	22-24	6	40	28-833	7	42	44-4	41	58
18-20	5	36	22-25	3	32	28-840	4	36	44-5	42	58
18-22	3	30	22-26	7	40	28-880	3	32	44-6	42	58
18-23	10	46	22-27	9	46	32-1	5	38	48-1	15	52
18-24	10	46	22-28	7	40	32-2	5	38			



## Available Inactive Inserts

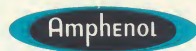
The following inserts are inactive for new military design but are available for replacement or non-military purposes. See the MS Connector Availability table on pages 24-61 for shell availability for each insert.

Inactive Insert	Super-seded by	Inactive Insert	Super-seded by	Inactive Insert	Super-seded by	Inactive Insert	Super-seded by	Inactive Insert	Super-seded by	Inactive Insert	Super-seded by	Inactive Insert	Super-seded by
10S-2	8S-1	16S-15	16S-4	18-27	18-5	20-28	20-27	22-33	20-7	28-7	28-5	36-4	36-3
12S-1	12S-3	16S-16	16S-4	18-28	18-5	20-30	—	22-35	22-2	28-13	28-12	36-11	36-10
12S-2	12S-3	16S-17	14S-7	18-29	16S-8	20-31	20-33	22-37	22-2	28-14	28-2	36-12	36-10
14S-1	14S-7	18-3	18-5	18-30	16S-8	20-32	20-7	24-3	24-20	28-15	28-21	36-16	36-7
14S-2	14S-5	18-10	18-11	18-31	16S-8	22-1	22-2	24-5	22-14	28-16	28-12	36-17	36-7
14S-4	12S-4	18-12	16S-1	20-1	20-27P	22-4	20-14	24-8	—	32-4	28-2	36-18	36-9
14S-6	—	18-17	18-9	20-3	20-4	22-6	22-14	24-9	24-12	32-5	32-1	36-20	—
14S-9	12S-3	18-18	18-9	20-6	18-4	22-8	22-9	24-13	—	32-8	32-7	36-21	36-9
14S-10	14S-7	18-19	18-1	20-10	—	22-13	22-15	24-15	22-14	32-11	—	40-12	—
14S-11	14S-2	18-20	16S-8	20-11	—	22-16	20-18	24-17	22-5	32-12	32-13	40-13	40-2
14S-12	14S-7	18-21	18-11	20-12	18-14	22-20	20-7	24-18	—	32-16	32-6	40-14	—
14S-13	14S-7	18-22	18-4	20-13	—	22-24	22-5	24-19	—	32-18	28-2	44-5	44-1
16S-5	14S-7	18-23	18-1	20-19	20-22	22-25	22-21	24-24	22-5	32-19	32-1	44-6	44-1
16S-6	14S-7	18-24	18-1	20-23	20-22	22-28	20-7	24-25	24-6	32-20	32-6	48-1	—
16-11	16-9	18-25	18-5	20-25	—	22-30	22-14	24-26	24-6	36-1	32-13		
16S-14	14S-7	18-26	18-5	20-26	—	22-32	22-5	28-6	28-22	36-2	36-3		



### NO SPECIAL IS TOO BIG, AND NONE TOO SMALL

Typical of many of the "big" specials developed by Amphenol Western Connector Division is this umbilical cable assembly used on ICBM's. Located in Chatsworth, California, Amphenol-Western is in the heart of the great West Coast aircraft and space industry. Western's engineers and manufacturing people have the kind of experience, knowledge, and responsiveness that comes from constant contact and association with the industry of the area. Let the Amphenol Area Division near you go to work on your "special" problems.



# THERMOCOUPLES FOR MS CONNECTORS

## Available in Many Different Materials and Insert Configurations

AMPHENOL offers a full range of thermocouple inserts. These include not only the iron-constantan combinations covered by AN and MS drawings under MIL-C-5015, but many other contact combinations of the following materials:

Contact Designation	Material	Color* Code	Magnetism
Alumel	94% Nickel; 2.5% Manganese 2% Aluminum; 1% Silicon; ½% Iron	Orange	Magnetic
Constantan	45% to 60% Copper; 40% to 55% Nickel; 0 to 1.4% Manganese; 0.1% Iron	Red	Non-Magnetic
Copper	87.5 to 90% Copper; 1.8 to 2.2% Lead; .1% Iron; .5% Nickel; .5% normal impurities and balance zinc	Yellow	Non-Magnetic
Iron	84.4% Iron; 2% Carbon; 3% Manganese; .6% Phosphorus; 2% Sulphur; .4% Silicon; 8.1% Copper; .9% Tin (Cadmium plated for corrosion resistance)	White	Magnetic
Chromel P	90% Nickel; 10% Chromium	Green	Non-Magnetic

\*Each thermocouple contact is identified by a spot of paint on the solder pocket end of the contact.

**Note:** Thermocouple contacts in Alumel and Chromel only are also available for crimp Poke-Home termination used with 69 Series connectors.

### Conditions of Use

A thermocouple is essentially a pair of wires of dissimilar metals connected at both ends. When the two junctions are subjected to different temperatures, an electrical potential is set up between them almost directly proportional to the temperature difference. A voltage measuring instrument in the circuit can thus measure temperature.

Because thermocouple junctions can withstand higher temperatures than the connectors used in conjunction with them, care must be taken to isolate the connectors. While contacts can withstand the temperatures shown in the following table, standard insert materials can withstand only 257°F continuous operation. However, special dielectrics and shell finishes can extend the usable connector range above 300°F. Consult your nearest AMPHENOL office for available items to meet your specific applications.

### Thermocouple Limits

Combination	Conditions	Temperature Range	
Copper-Constantan	Material has good resistance to corrosion with long life and stable calibration.	Thermocouple Junction Connector Contacts	Below 500°F 400°F
Iron—Constantan	Material can be used in either oxidizing or reducing atmospheres. It is not recommended for low temperatures and in the presence of moisture due to the rusting of the iron.	Thermocouple Junction Connector Contacts	500°F to 1200°F *600°F
Chromel—Alumel	Material is good for high temperature work and is more stable than iron and constantan combinations.	Thermocouple Junction Connector Contacts	High Temperature *600°F

\*These contacts can withstand higher temperatures but have not been tested because the general line of connectors will not withstand such temperatures in continuous operation.



## AVAILABLE THERMOCOUPLE INSERTS

Here are the thermocouple inserts available for shell types 3100A and B, 3101A and B, 3102A, 3106A and B, 3107A and B, and 3108A and B. Inserts listed for R type and 69 Series shells in the MS Connector Availability table, pages 24-61, are also available with size 16 contacts in alumel, chromel, and copper materials.

Wherever possible, order a standard AMPHENOL thermocouple insert. Sometimes, for example, you can modify your wiring to utilize an existing insert configuration instead of a "special." This will improve delivery of the required connectors.

In this listing, the first column shows the insert number to order for the desired combination; the second column shows the standard insert configuration it resembles; and the third column, the material for the designated contacts. (You can find the standard insert configuration shown in the MS Connector Availability table, pages 24-61.)

Order Insert Number	Similar Standard Insert	Contact Materials	Order Insert Number	Similar Standard Insert	Contact Materials
<b>2 #12 Contacts</b>			<b>8 Contacts (1 #12 and 7 #16)</b>		
16-13	16-13	A (Iron) B (Constantan)	18-423	18-8	ABCH (Chromel) DEFG (Alumel)
16-414	16-13	A (Copper) B (Constantan)	<b>10 #16 Contacts</b>		
16-848	16-13	A (Alumel) B (Chromel)	*18-426	18-1	ABCDJ (Iron) EFGHI (Constantan)
18-404	18-3	A (Constantan) B (Iron)	*18-434	18-1	All Alumel
18-405	18-3	A (Alumel) B (Chromel)	*18-435	18-1	All Chromel
18-422	18-3	A (Copper) B (Constantan)	*18-439	18-1	ABGHI (Alumel) CDEFJ (Chromel)
<b>2 #16 Contacts</b>			<b>12 #16 Contacts</b>		
*10SL-401	10SL-4	A (Alumel) B (Chromel)	24-409	24-19	ABCDEF (Iron) HJKLMN (Constantan)
*12S-6	12S-6	A (Constantan) B (Iron)	24-412	24-19	ABCDEF (Copper) HJKLMN (Constantan)
*12S-407	12S-6	A (Alumel) B (Chromel)	24-418	24-19	ABCDEF (Alumel) HJKLMN (Chromel)
*12S-409	12S-6	A (Copper) B (Constantan)	<b>14 #16 Contacts</b>		
*14S-414	14S-9	A (Alumel) B (Chromel)	20-412	20-27	ABCDEF (Alumel) HIJKLMN (Chromel)
*16S-417	16S-4	A (Alumel) B (Chromel)	20-413	20-27	ABCDEF (Iron) HIJKLMN (Constantan)
*16S-418	16S-4	A (Iron) B (Constantan)	22-431	22-19	ACEFJMP (Chromel) BDFHKLN (Alumel)
*16S-419	16S-4	A (Copper) B (Constantan)	<b>16 #16 Contacts</b>		
<b>4 #12 Contacts</b>			24-417	24-5	ABCDEF (Alumel) JKLMNPRS (Chromel)
18-15	18-15	AC (Iron) BD (Constantan)	24-423	24-5	ABCDEF (Iron) JKLMNPRS (Constantan)
18-401	18-10	AB (Alumel) CD (Chromel)	<b>20 #16 Contacts</b>		
18-402	18-10	AB (Iron) CD (Constantan)	28-420	28-16	ABCJKLMSTV (Constantan) DEFGHNPQRU (Iron)
18-403	18-15	AC (Alumel) BD (Chromel)	<b>22 Contacts (4 #12 and 18 #16)</b>		
18-411	18-10	A (Constantan) BCD (Copper)	36-411	36-1	ABEGILMORSU (Iron) CDFHJLNPTVW (Constantan)
18-452	18-15	A (Constantan) B (Copper) CD (Standard)	36-412	36-1	ABEGIKMORSU (Chromel) CDFHJLNPTVW (Alumel)
20-410	20-4	AC (Copper) BD (Constantan)	<b>24 #16 Contacts</b>		
<b>4 #16 Contacts</b>			24-414	24-28	ABCDEF (Alumel) NPQRSTUWXYZ (Chromel)
*14S-419	14S-2	AB (Alumel) CD (Chromel)	24-415	24-28	ABCDEF (Constantan) NPQRSTUWXYZ (Iron)
*14S-433	14S-2	AB (Standard) C (Alumel) D (Chromel)	24-422	24-28	ACEGJLNQSVWY (Copper) BDFHKMPRTUXZ (Constantan)
*14S-446	14S-2	AC (Iron) BD (Constantan)	24-430	24-28	All Chromel
<b>6 #16 Contacts</b>			24-431	24-28	All Alumel
*14S-415	14S-6	ACE (Copper) BDF (Constantan)	<b>26 #16 Contacts</b>		
*14S-421	14S-6	ABC (Iron) DEF (Constantan)	28-413	28-12	ABCDMNPRSTUZa (Iron) EFGHJKLVWXYbd (Constantan)
*14S-422	14S-6	ABC (Alumel) DEF (Chromel)	28-414	28-12	ABCDMNPRSTUZa (Copper) EFGHJKLVWXYbd (Constantan)
*14S-423	14S-6	A (Iron) BC (Alumel) D (Constantan) EF (Chromel)	<b>30 Contacts (6 #12 and 24 #16)</b>		
*14S-424	14S-6	A (Chromel) BC (Iron) D (Alumel) EF (Constantan)	32-408	32-8	ABCDEF (Iron) PRSTUWXYZabcde (Constantan)
18-443	18-12	ACE (Iron) BDF (Constantan)	<b>48 #16 Contacts</b>		
18-451	18-12	ACE (Copper) BDF (Constantan)	36-414	36-10	ABCDEF (Iron) Zabcde fghjklmnopqrstuvwxy (Constantan)
<b>8 #12 Contacts</b>			36-416	36-10	ABCDEF (Copper) Zabcde fghjklmnopqrstuvwxy (Constantan)
22-36	22-36	BDFH (Constantan) ACEG (Iron)	36-417	36-10	ABCDEF (Chromel) Zabcde fghjklmnopqrstuvwxy (Alumel)
22-404	22-23	ABFG (Iron) CDEH (Constantan)			
22-405	22-23	ABFG (Copper) CDEH (Constantan)			
22-406	22-23	ABFG (Alumel) CDEH (Chromel)			
22-407	22-23	ABC (Iron) EDF (Constantan) G (Chromel) H (Alumel)			
22-412	22-36	ACEG (Alumel) BDFH (Chromel)			
22-414	22-23	All Alumel			
22-415	22-23	All Chromel			
22-416	22-36	ACEG (Copper) BDFH (Constantan)			
24-401	24-6	ABFG (Iron) CDEH (Constantan)			
24-402	24-6	ABFG (Alumel) CDEH (Chromel)			
24-406	24-6	ABFG (Copper) CDEH (Constantan)			
<b>8 #16 Contacts</b>					
*20-408	20-7	ACEG (Chromel) BDFH (Alumel)			
*20-409	20-7	ACEG (Copper) BEFH (Constantan)			
22-422	22-18	ABCD (Alumel) EFGH (Chromel)			

\*Denotes thermocouple insert which uses a molded-in pin male insert.

**MS Connectors for Potting (438 Construction)**

Completely moisture-proof

Pressurized

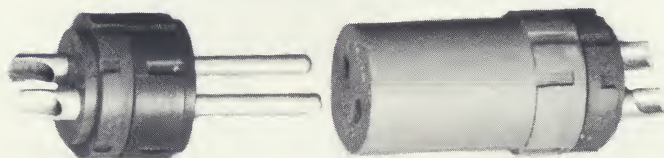
Resistant to salt water,  
aircraft lubricating oil, and jet fuels

AMPHENOL constructions for potting actually exceed the Type "E" requirements of military specifications for moisture-proof connectors. These constructions replace the back shell completely with a lightweight threaded retainer ring permanently staked to the shell.

To seal the back of the connector, potting compound is injected into an expendable polyethylene potting form and allowed to cure or set. When the form is removed, the resilient, hemispherically shaped insulation extends well into the connector. It forms a chemical

bond to the inner and outer walls of the plug, to the back of the insert, around the soldered connections and well out along the leads.

Not only is the back shell eliminated, but also the cable clamp. The solder joints are completely and individually protected by the resilient mass which surrounds them and resists transmittal of vibration to the soldered connections. The completed assembly is not only moistureproof, but also pressurized and resistant to salt water, aircraft lubricating oil, and jet fuels.

**High Temperature Connectors (496 Construction)****High-Temperature (496) Inserts**

**Insert Availability**—The inserts on the facing page are available in high-temperature construction. Those marked \* are available with socket contacts only; the others are available with both pin and socket contacts. For other detailed data on these inserts, see tables on pages 24-61.

AMPHENOL High Temperature Connectors can withstand 600°F operation and pass a 50-hour salt spray test after exposure for 8 hours at 600°F.

Available in all standard MS shells which are given a special anodized dichromate seal finish for continuous high heat use. Insert material is a special silicone compound. Socket contacts are chromium-copper; pin contacts are copper alloy. Both are plated with albaloy and finished with .0002" minimum gold plate.

Dimensions and internal parts are the same as for standard MS shells. To order, use the standard MS nomenclature but substitute "97" for "MS" and add suffix (496). Example: 97-3106A18-10P(496) is the high-temperature version of MS-3106A18-10P.



## How to Order MS Connectors for Potting

To order AMPHENOL MS connectors in constructions for potting, use the standard MS nomenclature (MS 3100A, MS 3101A, and MS 3106A constructions are available), but substitute "97" for "MS", drop the "A" suffix for type of back shell, and add the applicable deviation (XXX) as shown below. Example: 97-310628-16S (438).

Modified MS 3100R, 3101R, and 3106R connectors for potting can be ordered by substituting "69" for "MS310" in the part number and adding the suffix "438". For example: 69-6R28-16S (438) is a modified-for-potting MS 3106R plug with 28-16S insert.

## Expendable Potting Forms

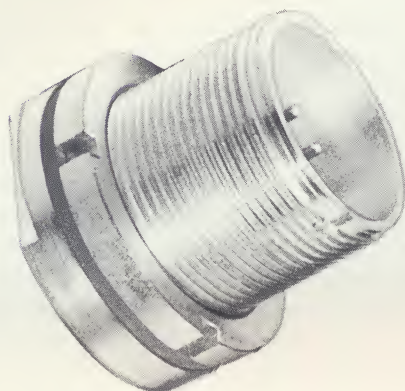
For companies not using their own potting molds AMPHENOL provides expendable polyethylene forms. These expendable forms need no treatment before use. Though designed to be discarded without difficulty, they can be left on assemblies after potting. A blueprint for easy assembly of an inexpensive potting compound dispenser will be sent upon request. So will the names of manufacturers whose potting compounds have been tested and found acceptable. Nylon potting forms to be left permanently on the assembly are also available. These forms are supplied with construction (824).

Deviation	Explanation	Shell Styles	
438	Modified "MS" for potting where back shell is replaced by threaded retainer ring. A type "W" washer is included under 3106 coupling ring.	3100 3101	3106 3107
469	Applies to connectors ordered under BuAer 54A-3A-225 original specification. Consists of (438) construction in 3106A shell style only. Connectors are marked "BuAer 54A-3A-225-XX-XX"	3106	
479	Consists of (438) basic construction with standard #16 contacts replaced by contacts for taper pin terminals.	3100 3101	3106 3107
517	New (438) construction having retainer ring type grounding lug. Connectors are marked "97-310X-XX-XX(517)."	3100 3101	3106 3107
521	Consists of (438) construction with expendable dust cap on one end. Connector is marked "97-310X-XX-XX(438)."	3100 3101	3106 3107
538	Made per BuAer drawing 54A-3A-225 Revision A. Consists of (438) construction having grounding lug. Marked "BuAer 54A-3A-225A-XX-XX."	3106	
541	Consists of (438) construction with 9755-255-XX expendable potting form. Connectors are marked "97-310X-XX-XX(438)."	3100 3101	3106 3107
542	(438) construction with grounding lug and expendable potting form. Connectors are marked "97-310X-XX-XX(517)."	3100 3101	3106 3107
546	Consists of (469) construction and expendable dust cap on one end. Connector marked "BuAer 54A-3A-225-XX-XX."	3106	
816	Consists of (438) construction marked "MS25183-XX-XX."	3106	
824	Consists of (816) construction plus nylon potting form.	3106	
840	Consists of (438) construction having ground lug and marked "MS25183A-XX-XX."	3106	
887	Consists of (840) construction plus polyethylene potting form.	3106	

## Insert Availability—496 Construction

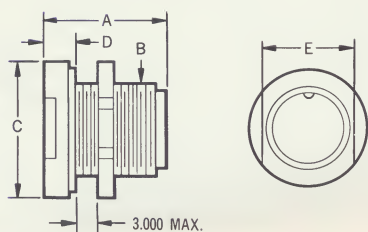
Insert No.	Con-tacts	Insert No.	Con-tacts	Insert No.	Con-tacts	Insert No.	Con-tacts	Insert No.	Con-tacts	Insert No.	Con-tacts
* 8S-1	1	*16S-4	2	*18-19	10	20-33	11	22-33	7	28-14	11
*10S-2	1	*16S-5	3	*18-20	5	22-5	6	22-34	5	28-15	35
*10SL-3	3	*16S-6	3	18-22	3	22-8	2	24-2	7	28-16	20
*10SL-4	2	*16S-8	5	*18-29	5	22-9	3	24-3	7	28-17	15
*12S-3	2	16-9	4	20-3	3	22-10	4	24-5	16	28-18	12
*12S-4	1	16-10	3	20-4	4	22-11	2	24-6	8	28-19	10
*12S-5	1	*16-11	2	20-5	2	22-13	5	24-7	16	28-20	14
*14S-1	3	*16S-14	3	20-6	3	22-14	19	24-17	5	28-21	37
*14S-2	4	*18-1	10	*20-7	8	22-15	6	24-19	12	32-4	14
*14S-4	1	18-3	2	20-9	8	22-16	9	24-20	11	32-7	35
*14S-5	5	18-4	4	20-11	13	22-17	9	24-27	7	32-8	30
*14S-6	6	18-5	3	20-15	7	22-18	8	24-28	24	32-12	15
*14S-7	3	18-8	8	20-16	9	22-19	14	28-2	14	32-13	23
*14S-9	2	*18-9	7	20-17	6	22-20	9	28-4	9		
*14S-10	4	18-10	4	20-18	9	22-23	8	28-8	12		
*16S-1	7	18-11	5	20-21	9	22-24	6	28-9	12		
16-2	1	18-12	6	20-27	14	22-26	7	28-11	22		
*16S-3	1	18-16	1	20-29	17	22-28	7	28-12	26		

## Panel Mount Receptacles—Pressure Sealed—72 Series



Operate from  $-70^{\circ}$  to  $+125^{\circ}\text{C}$  maintaining an efficient seal. In comparison to the 1 cubic inch per hour leakage rate allowed for standard MS pressurized connectors, the 72 Series leakage rate must not exceed 0.1 cubic inch per hour.

AMPHENOL 72 Series connectors are designed for use with nitrogen and air filled containers. The 72 Series receptacles mate with standard MS plugs using the same insert arrangement. Alternate insert positions 1, 2, 3, and 4 are equivalent to MS insert positions W, X, Y, and Z. Shells are machined aluminum, cadmium-plated with a clear chromate seal.



Dimensions—Inches

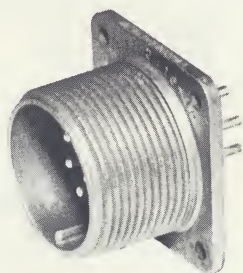
Connector Size	A	B	C	D	E
18	$1\frac{1}{16}$	$1\frac{1}{8}-18$	$1\frac{1}{2}$	$\frac{9}{32}$	$1\frac{1}{4}$
20	$1\frac{1}{16}$	$1\frac{1}{4}-18$	$1\frac{1}{8}$	$\frac{9}{32}$	$1\frac{3}{8}$
24	$1\frac{1}{8}$	$1\frac{1}{2}-18$	$1\frac{1}{8}$	$1\frac{1}{32}$	$1\frac{5}{8}$
28	$1\frac{1}{8}$	$1\frac{3}{4}-18$	$2\frac{1}{8}$	$1\frac{1}{32}$	$1\frac{7}{8}$

## INSERT INFORMATION

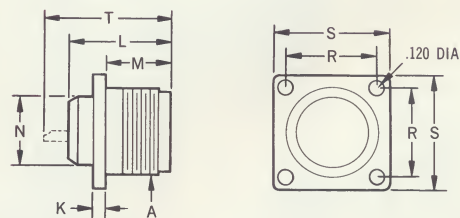
AMPHENOL Number	Insert Number	Total No. of Contacts
72-18090	18-9	7
72-18200	18-20	5
72-20070	20-7	8
72-20160	20-16	9
72-20180	20-18	9
72-20270	20-27	14
*72-20330	20-33	11
72-24200	24-20	11
72-24280	24-28	24
72-28020	28-2	14
72-28120	28-12	26
72-28170	28-17	15
72-28190	28-19	10

\*Not available in alternate insert positions

## Short Skirt Receptacles (107 Construction)



For applications having depth space limitations. Inserts available are 18-1P and 20-27P. The inserts are of molded-in construction. A sealing compound is applied to the outer surface of the insert and assembled in the shell by spinning. To order add "(107) Construction" to the standard MS number. Example: MS3102A18-1P(107).

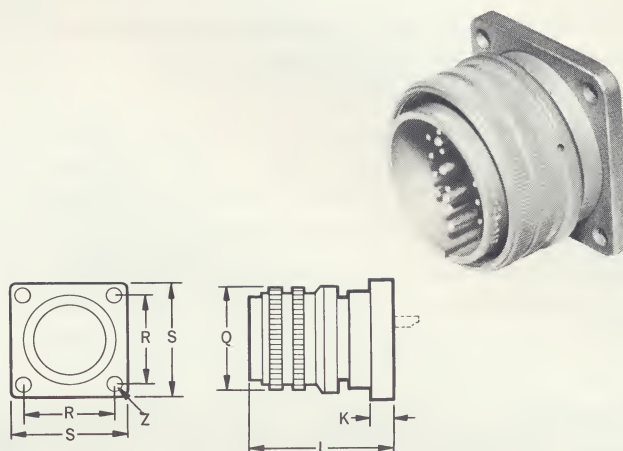


Connector Size	A Coupling Threads	Dimensions—Inches						
		K	L	M	N	R	S	T
18	$1\frac{1}{8}-18$	$\frac{3}{32}$	$1\frac{1}{32}$	$\frac{3}{4}$	1	$1\frac{1}{16}$	$1\frac{3}{8}$	$1\frac{1}{32}$
20	$1\frac{1}{4}-18$	$\frac{3}{32}$	$1\frac{1}{32}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{32}$	$1\frac{1}{2}$	$1\frac{11}{64}$



## Box Type Plugs (97-5105 Construction)

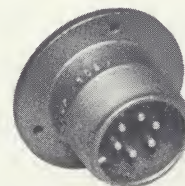
Con- nector Size	Dimensions—Inches					Z Mounting Threads
	K	L	Q	R	S	
8S	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{9}{16}$	$2\frac{5}{32}$	4-36
10S	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{9}{16}$	$2\frac{5}{32}$	4-36
12S	$\frac{5}{32}$	$3\frac{1}{32}$	1	$1\frac{3}{16}$	$1\frac{1}{16}$	4-36
12	$\frac{5}{32}$	$1\frac{3}{8}$	1	$1\frac{3}{16}$	$1\frac{1}{16}$	4-36
14S	$\frac{5}{32}$	$3\frac{1}{32}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{16}$	4-36
14	$\frac{5}{32}$	$1\frac{3}{8}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{16}$	4-36
16S	$\frac{5}{32}$	$3\frac{1}{32}$	$1\frac{1}{4}$	1	$1\frac{5}{16}$	6-32
16	$\frac{5}{32}$	$1\frac{13}{32}$	$1\frac{1}{4}$	1	$1\frac{5}{16}$	6-32
18	$\frac{5}{32}$	$1\frac{13}{32}$	$1\frac{11}{32}$	1	$1\frac{5}{16}$	6-32
20	$\frac{3}{16}$	$1\frac{13}{32}$	$1\frac{15}{32}$	$1\frac{1}{4}$	$1\frac{5}{8}$	10-24
22	$\frac{3}{16}$	$1\frac{13}{32}$	$1\frac{19}{32}$	$1\frac{1}{4}$	$1\frac{5}{8}$	10-24
24	$\frac{3}{16}$	$1\frac{13}{32}$	$1\frac{23}{32}$	$1\frac{9}{16}$	2	10-24
28	$\frac{3}{16}$	$1\frac{13}{32}$	$1\frac{31}{32}$	$1\frac{9}{16}$	2	10-24
32	$\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{7}{32}$	$1\frac{3}{4}$	$2\frac{1}{2}$	10-24
36	$\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{15}{32}$	$1\frac{3}{4}$	$2\frac{1}{2}$	10-24



Square flange for mounting directly on box or housing. Provides a means of directly connecting two pieces of equipment without interconnecting wires. Available in all sizes with either male or female inserts. To order, complete the part number (97-5105) by adding the proper insert number. (See pages 24-61 for insert information.) Example: 97-510528-20S.

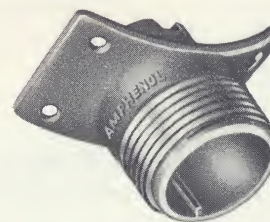
## Round Flange Receptacles (109 and 110 Construction)

For applications requiring round flanges and spun-in inserts. Construction (109) has tapped holes, (110) has drilled holes. Available with all 14S inserts. To order, complete part number (97-3102) by adding proper insert and construction numbers. Example: 97-310214S-6P(109).



## Curved Flange Receptacles (113 Construction)

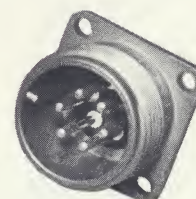
For mounting on motor, generator or similar housing of 2" diameter. Available with 12S-3P insert.



## Small and Intermediate Flange Receptacles

Small Flange, (115) Construction Receptacles are available in sizes 10SL, 12S and 14S with male or female inserts. Intermediate Flange, (116) Construction Receptacles are available in sizes 12S with male or female inserts. To order, complete part number (97-3102) by adding proper insert and construction numbers. Example: 97-310212S-4S(115).

Pressurized construction is also available in this shell style. Specify (231) in place of (115) and (232) in place of (116).



## AN and 97 Fittings

In accordance with current military specifications, MS electrical connectors are required in the installation of electrical and radio equipment on aircraft, marine and other motorized units. The same connectors are also in widespread use in the radio and electronic industries. To join the connectors properly to the conduit and to provide for runs, turns, couplings, and other devices needed in the complete installation, a comprehensive line of fittings has been designed by the military services and manufactured by AMPHENOL.

## Construction

AMPHENOL AN fittings are made to military standards. The material is aluminum alloy of specified strength. All threads are accurately manufactured to specifications so that parts are completely interchangeable.

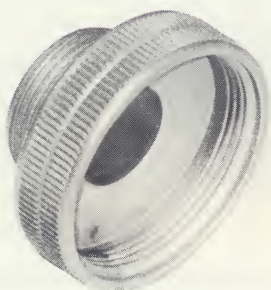
Threads are coated at the factory to prevent binding of coupled parts.

## Identification

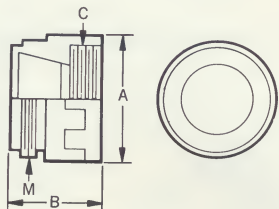
Many AMPHENOL fittings have the official "AN" part number plainly stamped or cast on them. This feature saves time and reduces errors on the part of anyone who handles the fittings and makes accurate replacement easy.

The marking arrangement worked out by the military services consists of a class number to indicate type of fitting and a dash number to indicate size. Example: AN3066-12. The AN3066 is the general classification of hexagon locknuts, and the -12 is the size for  $\frac{3}{4}$ " conduit.

## Adapter for MS Connectors—AN 3055



The AN 3055 adapter is used with standard MS connectors as a reducing or extending bushing.



Conduit Size *Inches	AN Number	Used on Connector Sizes	Dimensions—Inches				Weight Lbs. per 100
			A	B	C Threads	M Threads	
$\frac{3}{16}$	AN 3055-10-3	8S, 10S	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{1}{2}$ -28	$\frac{1}{2}$ -28	.98
	AN 3055-12-3	12S, 12	$\frac{25}{32}$	$\frac{7}{8}$	$\frac{5}{8}$ -24	$\frac{1}{2}$ -28	1.10
$\frac{1}{4}$	AN 3055-12-4	12S, 12	$\frac{25}{32}$	$\frac{7}{8}$	$\frac{5}{8}$ -24	$\frac{5}{8}$ -24	1.37
	AN 3055-14-4	14S, 14	$\frac{29}{32}$	$\frac{7}{8}$	$\frac{3}{4}$ -20	$\frac{5}{8}$ -24	1.42
	AN 3055-16-4	16S, 16	$1\frac{1}{16}$	$\frac{7}{8}$	$\frac{7}{8}$ -20	$\frac{5}{8}$ -24	1.55
$\frac{3}{8}$	AN 3055-14-6	14S, 14	$\frac{23}{32}$	$\frac{7}{8}$	$\frac{3}{4}$ -20	$\frac{3}{4}$ -20	1.60
	AN 3055-16-6	16S, 16	$1\frac{1}{16}$	$\frac{7}{8}$	$\frac{7}{8}$ -20	$\frac{3}{4}$ -20	1.90
	AN 3055-18-6	18	$1\frac{3}{16}$	$\frac{7}{8}$	1 -20	$\frac{3}{4}$ -20	2.00
$\frac{1}{2}$	AN 3055-16-8	16S, 16	$1\frac{1}{16}$	$\frac{7}{8}$	$\frac{7}{8}$ -20	$\frac{7}{8}$ -20	2.35
	AN 3055-18-8	18	$1\frac{3}{16}$	$\frac{7}{8}$	1 -20	$\frac{7}{8}$ -20	2.53
	AN 3055-22-8	20, 22	$1\frac{3}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	$\frac{7}{8}$ -20	2.70
$\frac{5}{8}$	AN 3055-18-10	18	$1\frac{3}{16}$	$\frac{7}{8}$	1 -20	1 -20	2.82
	AN 3055-22-10	20, 22	$1\frac{3}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	1 -20	3.00
	AN 3055-28-10	24, 28	$1\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	1 -20	3.15
$\frac{3}{4}$	AN 3055-22-12	20, 22	$1\frac{3}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	$1\frac{1}{16}$ -18	4.80
	AN 3055-28-12	24, 28	$1\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	$1\frac{1}{16}$ -18	5.01
	AN 3055-32-12	32	$1\frac{5}{16}$	$1\frac{5}{16}$	$1\frac{3}{4}$ -18	$1\frac{1}{16}$ -18	5.20
1	AN 3055-28-16	24, 28	$1\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{16}$ -18	$1\frac{1}{16}$ -18	5.42
	AN 3055-32-16	32	$1\frac{11}{16}$	$1\frac{5}{16}$	$1\frac{3}{4}$ -18	$1\frac{1}{16}$ -18	5.60
	AN 3055-36-16	36	$2\frac{3}{16}$	$1\frac{1}{16}$	2 -18	$1\frac{1}{16}$ -18	5.73
$1\frac{1}{4}$	AN 3055-32-20	32	$1\frac{7}{8}$	$1\frac{5}{16}$	$1\frac{3}{4}$ -18	$1\frac{3}{4}$ -18	5.86
	AN 3055-36-20	36	$2\frac{3}{16}$	$1\frac{1}{16}$	2 -18	$1\frac{3}{4}$ -18	6.00
	AN 3055-40-20	40	$2\frac{7}{16}$	$1\frac{1}{16}$	$2\frac{1}{4}$ -16	$1\frac{3}{4}$ -18	6.20
$1\frac{1}{2}$	AN 3055-36-24	36	$2\frac{1}{8}$	$1\frac{1}{16}$	2 -18	2 -18	7.45
	AN 3055-40-24	40	$2\frac{7}{16}$	$1\frac{1}{16}$	$2\frac{1}{4}$ -16	2 -18	7.50
	AN 3055-44-24	44	$2\frac{11}{16}$	$1\frac{3}{16}$	$2\frac{1}{2}$ -16	2 -18	7.60
$1\frac{3}{4}$	AN 3055-48-28	48	$3\frac{3}{16}$	$1\frac{5}{16}$	3 -16	$2\frac{1}{4}$ -16	7.90
2	AN 3055-44-32	44	$2\frac{5}{8}$	$1\frac{3}{16}$	$2\frac{1}{2}$ -16	$2\frac{1}{2}$ -16	8.00

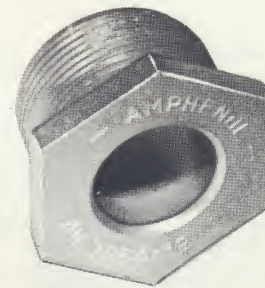
\*Indicates nominal inside diameter of flexible Shielding Conduit No. AN-WW-C-561 or outside diameter of rigid aluminum conduit No. AND-10101. Brass or other conduit of similar size may be used with these fittings.

**NOTE:** The selection of fittings for connection to MS connectors is based on the connector size AND the cable or conduit size. For other connections, such as terminations and couplings, fitting sizes correspond to the size of the cable or conduit used.

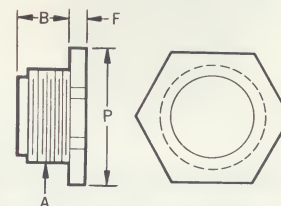


## Conduit Box Connectors—AN 3064

Used with AN 3066 conduit coupling locknut to form a termination at conduit boxes or panel. The conduit box connector may also be used with AN 3057 cable clamp to relieve strain on wiring cable terminals.

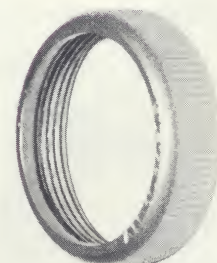
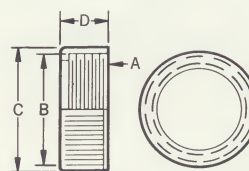


Conduit Size Inches*	AN Number	Use Conduit Coupling Lock Nut Size	Use Conduit Coupling Nut No.	Dimensions—Inches				Weight Lbs. per 100
				A Threads	B	F	P	
3/16	AN 3064-3	AN 3066-3	AN 3054-3	1/2 -28	3/4	1/8	1 1/16	1.17
1/4	AN 3064-4	AN 3066-4	AN 3054-4	5/8 -24	3/4	1/8	1 3/16	1.75
3/8	AN 3064-6	AN 3066-6	AN 3054-6	3/4 -20	3/4	1/8	1 5/16	2.18
1/2	AN 3064-8	AN 3066-8	AN 3054-8	7/8 -20	7/8	3/16	1 1/2	3.15
5/8	AN 3064-10	AN 3066-10	AN 3054-10	1 -20	7/8	3/16	1 1/4	3.94
3/4	AN 3064-12	AN 3066-12	AN 3054-12	1 3/16 -18	7/8	3/16	1 3/8	4.98
1	AN 3064-16	AN 3066-16	AN 3054-16	1 7/16 -18	7/8	3/16	1 5/8	5.75
1 1/4	AN 3064-20	AN 3066-20	AN 3054-20	1 3/4 -18	1 5/16	3/16	2	9.17



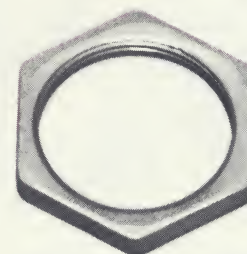
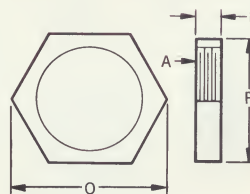
## Conduit Coupling Nut—AN 3054

Max. Conduit Size Inches*	AN Number	MS Connector Size	AN Conduit Fitting Size	Dimensions—Inches				Weight Lbs. per 100
				A Threads	B	C	D	
3/16	AN 3054-3	8S, 10S	3	1/2 -28	.396	1 9/32	7/16	.42
1/4	AN 3054-4	12, 12S	4	5/8 -24	.458	2 3/32	7/16	.68
3/8	AN 3054-6	14, 14S	6	3/4 -20	.583	2 7/32	7/16	.70
1/2	AN 3054-8	16, 16S	8	7/8 -20	.708	1	7/16	1.02
5/8	AN 3054-10	18	10	1 -20	.833	1 1/8	7/16	1.31
3/4	AN 3054-12	20, 22	12	1 3/16 -18	.993	1 5/16	7/16	1.60
1	AN 3054-16	24, 28	16	1 7/16 -18	1.278	1 9/16	7/16	1.90
1 1/4	AN 3054-20	32	20	1 3/4 -18	1.533	1 7/8	1/2	2.10



## Conduit Coupling Lock Nut—AN 3066

Conduit Size Inches*	AN Number	Dimensions—Inches				Weight Lbs. per 100
		A Threads	F	P	Q	
3/16	AN 3066-3	1/2 -28	1/8	1 1/16	5 1/64	.28
1/4	AN 3066-4	5/8 -24	1/8	1 3/16	1 5/16	.36
3/8	AN 3066-6	3/4 -20	1/8	1 5/16	1 3/32	.41
1/2	AN 3066-8	7/8 -20	3/16	1 1/2	1 15/64	.72
5/8	AN 3066-10	1 -20	3/16	1 1/4	1 7/16	.86
3/4	AN 3066-12	1 3/16 -18	3/16	1 3/8	1 19/32	1.01
1	AN 3066-16	1 7/16 -18	3/16	1 5/8	1 7/8	1.25
1 1/4	AN 3066-20	1 3/4 -18	3/16	2	2 5/16	1.85
1 1/2	AN 3066-24	2 -18	3/16	2 3/16	2 17/32	2.04

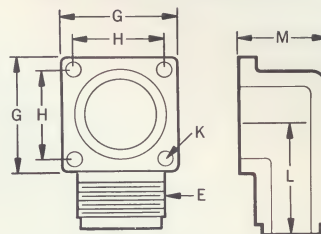
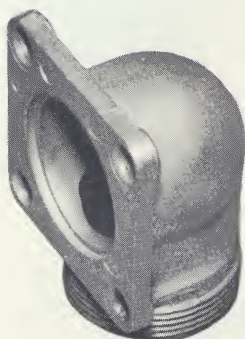


\*Indicates nominal inside diameter of flexible Shielding Conduit No. AN-WW-C-561 or outside diameter of rigid aluminum conduit No. AND-10101. Brass or other conduit of similar size may be used with these fittings.

**NOTE:** The selection of fittings for connection to MS connectors is based on the connector size AND the cable or conduit size. For other connections such as terminations and couplings, fitting sizes correspond to the size of the cable or conduit used.

## AN and 97 Fittings

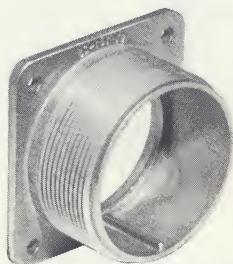
### Junction Shells—9784



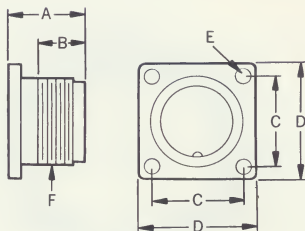
These junction shells may be used as panel terminations to hold cable harnesses when not in use or as right-angle feed-throughs similar to the AN 3064. Adding the AN 3057 cable clamps provides strain relief.

AMPHENOL Number	Use Fitting Size	Dimensions—Inches						Wt. Lbs. per 100 Pcs.
		E Threads	G	H	K Dia.	L	M	
9784-10S	3	1/2—28	25/32	9/16	.120	7/8	5/8	1.20
9784-12S	4	5/8—24	1 1/16	1 3/16	.125	1	2 3/32	1.20
9784-14S	6	3/4—20	1 1/16	1 3/16	.125	1	2 5/32	2.34
9784-16S	8	7/8—20	1 5/16	1	.141	1 1/8	3 1/32	2.84
9784-18	10	1 —20	1 5/16	1	.141	1 1/8	1 1/32	3.98
9784-20	12	1 3/16—18	1 5/8	1 1/4	.203	1 5/16	1 1/4	6.60
9784-24	16	1 7/16—18	2	1 9/16	.203	1 1/2	1 25/32	12.47
9784-32	20	1 3/4 —18	2 1/2	1 13/16	.203	1 25/32	2 1/16	12.47
9784-36	24	2 —18	2 1/2	1 13/16	.203	1 25/32	2 3/16	20.01

### Dummy Receptacle Shells—97-181



Same as standard MS receptacle without insulation or contacts. Used for anchoring straight or angle type MS plugs when they are not in use.



For Connector Size	AMPHENOL Number	Dimensions—Inches						Weight Lbs. per 100
		A	B	C	D	E Dia.	F Threads	
8S	97-181-8S	5/8	3/8	19/32	7/8	.120	1/2—28	1.01
10S	97-181-10S	5/8	3/8	23/32	1	.120	5/8—24	1.10
12S	97-181-12S	5/8	3/8	13/16	1 3/32	.120	3/4—20	1.73
14S	97-181-14S	5/8	3/8	29/32	1 3/16	.120	7/8—20	2.00
16S	97-181-16S	41/64	3/8	31/32	1 9/32	.120	1 —20	2.35
12	97-181-12	1 3/16	5/8	1 3/16	1 3/32	.120	3/4—20	2.30
14	97-181-14	1 3/16	5/8	29/32	1 3/16	.120	7/8—20	2.41
16	97-181-16	53/64	5/8	31/32	1 9/32	.120	1 —20	3.10
18	97-181-18	27/32	5/8	1 1/16	1 3/8	.120	1 1/8—18	3.18
20	97-181-20	27/32	5/8	1 5/32	1 1/2	.120	1 1/4—18	3.80
22	97-181-22	27/32	5/8	1 1/4	1 5/8	.120	1 3/8—18	4.50
24	97-181-24	29/32	5/8	1 3/8	1 3/4	.147	1 1/2—18	5.00
28	97-181-28	29/32	5/8	1 9/16	2	.147	1 3/4—18	6.58
32	97-181-32	1	5/8	1 3/4	2 1/4	.173	2 —18	9.75
36	97-181-36	1	5/8	1 15/16	2 1/2	.173	2 1/4—16	11.90
40	97-181-40	1	5/8	2 1/16	2 3/4	.173	2 1/2—16	14.25
44	97-181-44	1	5/8	2 3/8	3	.173	2 3/4—16	16.05
48	97-181-48	1	5/8	2 5/8	3 1/4	.173	3 —16	17.05



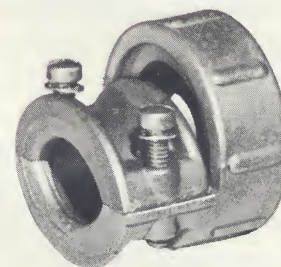
## AN and 97 Cable Clamps

Sturdy AMPHENOL cable clamps support cable or wire at the plug or receptacle and prevent twisting and pulling at soldered connections. An ideal cable clamp for almost every type of application is available from AMPHENOL's complete line. Cable clamps having an "AN" prefix in their part number are Army-Navy standard parts and cable clamps with a "97" prefix are AMPHENOL designs.

All AMPHENOL cable clamps are made to the same rigid specifications. Die cast aluminum parts are used for strength and light weight. Screws and washers are precision manufactured and plated to prevent corrosion. All threads are accurately manufactured to specifications so that parts are completely interchangeable. Threads are lubricated at the factory to prevent binding of coupled parts. Further lubrication is not necessary in assembling to connectors or other fittings.

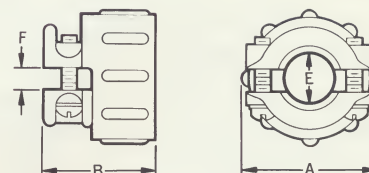
### Cable Clamp—AN 3057

For rubber covered cable or wires protected by tubing. To provide for the most firm grip, the cable or wires should be centered in the jaws of the clamp. A vinyl or rubber bushing or sleeve may be used for this purpose. In applications where the cable is subject to considerable flexing, the resilient sleeve should project for several inches along the wire. This reinforcement lengthens the life of the cable.



AN Number	Fits Shell Size	Fits AN Fitting Size	Max. O. D. Cable	Dimensions—Inches					Weight Lbs. per 100
				A	B	E	F	Threads	
AN 3057-3	8S, 10S	3	1/4	1 1/16	1	1/4	1/8	1/2-28	1.89
AN 3057-4	†12, 12S	4	5/16	2 5/32	1	5/16	3/16	5/8-24	2.12
AN 3057-6	14, 14S	6	7/16	1 5/16	1 5/16	7/16	3/16	3/4-20	2.94
AN 3057-8	16, 16S	8	9/16	1 1/16	1 1/8	9/16	9/32	7/8-20	3.44
AN 3057-10	18	10	5/8	1 3/8	1 1/8	5/8	5/16	1 -20	4.72
AN 3057-12	20, 22	12	3/4	1 3/8	1 3/16	3/4	5/16	1 3/16-18	6.10
AN 3057-16	24, 28	16	1 5/16	1 5/8	1 5/16	1 5/16	3/8	1 7/16-18	8.71
AN 3057-20	32	20	1 1/4	1 5/16	1 1/2	1 1/4	1/2	1 3/4 -18	14.85
AN 3057-24	36	24	1 3/8	2 3/16	1 9/16	1 3/8	19/32	2 -18	18.15
AN 3057-28	40	28	1 5/8	2 1/2	1 9/16	1 5/8	2 1/32	2 1/4 -16	21.50
AN 3057-32	44	32	1 7/8	2 3/4	1 9/16	1 7/8	3/4	2 1/2 -16	24.65
AN 3057-40	48	40	2 1/2	3 1/4	1 5/8	2 1/2	2 9/32	3 -16	27.90

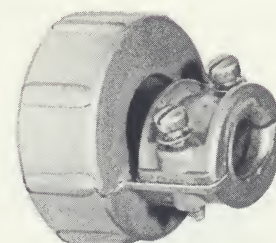
†Clamps for connectors size 10SL are the same as for sizes 12 and 12S.



### Step Down Cable Clamp—97-3057

Like the AN 3057 except for the step down feature that accommodates smaller cable than that for which AN 3057 was designed.

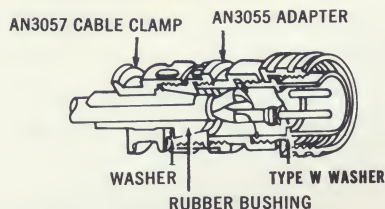
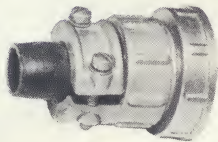
AMPHENOL Number	Fits Shell Size	Fits AN Fitting Size	Max. O. D. Cable	Dimensions—Inches					Weight Lbs. per 100
				A	B	E	F	Threads	
97-3057-10-6	18	10	1/2	1 3/16	1 1/8	7/16	3/16	1 -20	3.94
97-3057-12-6	20, 22	12	1/2	1 3/8	1 3/16	7/16	3/16	1 3/16-18	4.40



**NOTE:** The selection of fittings for connection to MS connectors is based on the connector size AND the cable or conduit size. For other connections, such as terminations and couplings, fitting sizes correspond to the size of the cable or conduit used.

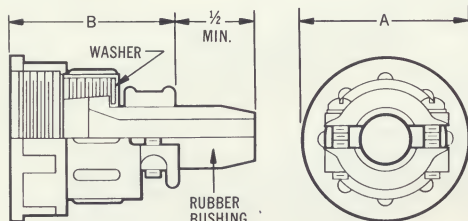
## AN and 97 Cable Clamps

### Waterproof Cable Clamps—9767



#### For MS Connectors

Because MS connectors do not include an inside tapered surface for seating the rubber bushing, the waterproof cable clamp assembly is supplied with an adapter. The adapter may have a 1 to 1 ratio or be a reducing adapter as illustrated above.



**NOTE:** The selection of fittings for connections to MS connectors is based on the connector size AND the cable or conduit size. For other connections, such as terminations and couplings, fitting sizes correspond to the size of the cable or conduit used.

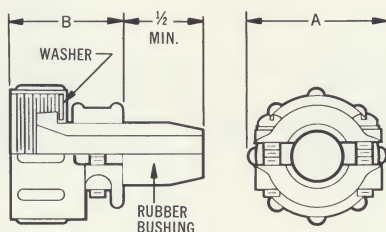
The complete waterproof cable clamp assembly No. 9767 (for use with MS connectors) consists of an AN 3057 Cable Clamp, a rubber bushing, washer and an AN 3055 Adapter.

The sectional view of AMPHENOL 9767 Waterproof Cable Clamp and an AMPHENOL MS plug shows the parts of the clamp as well as the waterproof type "W" washer on the front shoulder in the plug. Since this washer is cemented to the shoulder of the plug shell at the time of plug assembly, remember to specify Type W Washer (417) when ordering connectors for waterproof connections. Available for all sizes of MS and 97 plugs.

Maximum Cable O. D. Inches	AMPHENOL Number	Connector Size	Dimensions—Inches			Wgt. Lbs. per 100
			A	B	Threads	
5/32	9767-10-3	8S, 10S	2 1/32	1 17/32	1/2-28	3.10
	9767-12-3	10SL, 12S, 12	2 5/32	1 17/32	5/8-24	3.19
7/32	9767-10-4	8S, 10S	1 1/16	1 17/32	1/2-28	3.46
	9767-12-4	10SL, 12S, 12	2 5/32	1 17/32	5/8-24	3.82
	9767-14-4	12SL, 14S, 14	2 9/32	1 17/32	3/4-20	3.87
	9767-16-4	16S, 16	1 1/16	1 17/32	7/8-20	4.00
1 1/32	9767-14-6	12SL, 14S, 14	2 9/32	1 19/32	3/4-20	5.54
	9767-16-6	16S, 16	1 1/16	1 19/32	7/8-20	5.84
	9767-18-6	18	1 3/16	1 19/32	1 -20	5.94
7/16	9767-16-8	16S, 16	1 1/16	1 19/32	7/8-20	6.92
	9767-18-8	18	1 3/16	1 19/32	1 -20	7.10
	9767-22-8	20, 22	1 3/8	1 19/32	1 3/16-18	7.27
9/16	9767-18-10	18	1 3/16	1 19/32	1 -20	8.79
	9767-22-10	20, 22	1 3/8	1 19/32	1 3/16-18	8.97
	9767-28-10	24, 28	1 5/8	1 17/32	1 7/16-18	9.12
1 1/16	9767-22-12	20, 22	1 3/8	1 21/32	1 3/16-18	12.65
	9767-28-12	24, 28	1 5/8	1 21/32	1 7/16-18	12.86
	9767-32-12	32	1 11/16	1 23/32	1 3/4 -18	13.05
2 7/32	9767-28-16	24, 28	1 5/8	1 25/32	1 7/16-18	14.95
	9767-32-16	32	1 11/16	1 27/32	1 3/4 -18	16.13
	9767-36-16	36	2 3/16	1 31/32	2 -18	16.26
1 1/2	9767-32-20	32	1 11/16	1 31/32	1 3/4 -18	22.27
	9767-36-20	36	2 3/16	2 1/32	2 -18	22.41
	9767-40-20	40	2 7/16	2 3/32	2 1/4 -16	22.61
1 3/16	9767-36-24	36	2 3/16	2 3/32	2 -18	29.85
	9767-40-24	40	2 7/16	2 3/32	2 1/4 -16	29.90
	9767-44-24	44	2 11/16	2 7/32	2 1/2 -16	30.00

#### For AN Fittings

When selecting a cable clamp for a connection with fittings, the 9767 Waterproof Cable Clamp without the adapter may be used. AN fittings have the required inside tapered surface for seating the special rubber bushing.



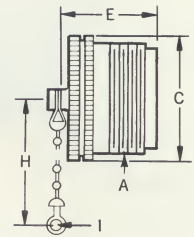
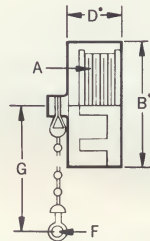
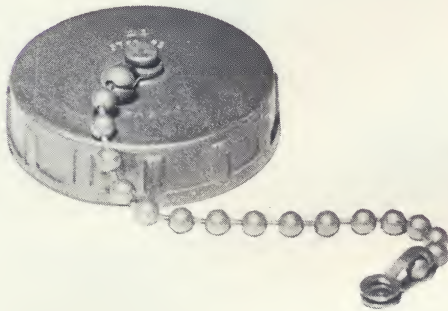
Maximum Cable O. D. Inches	AMPHENOL Number	Fitting Size	Dimensions—Inches			Wgt. Lbs. per 100
			A	B	Threads	
5/32	9767-3	3	2 1/32	1	1/2-28	2.09
7/32	9767-4	4	2 5/32	1	5/8-24	2.45
1 1/32	9767-6	6	2 9/32	1 5/16	3/4-20	3.94
7/16	9767-8	8	1 1/16	1 1/8	7/8-20	4.57
9/16	9767-10	10	1 3/16	1 1/8	1 -20	5.97
1 1/16	9767-12	12	1 3/8	1 3/16	1 3/16-18	7.85
2 7/32	9767-16	16	1 5/8	1 5/16	1 7/16-18	9.53
1 1/2	9767-20	20	1 11/16	1 1/2	1 3/4 -18	16.41
1 3/16	9767-24	24	2 3/16	1 5/8	2 -18	22.40



## Cap and Chain Assemblies—9760

Fit MS and 97 type receptacles and plugs. Provide protection against live circuits and from dirt and dust when connector is not in use.

Both 9760 cap for receptacles and 9760P male cap for plugs are available without the beaded chain. Add suffix (291) for flat link aluminum chain.



**No. 9760** has internal threads and is used on all receptacles (MS 3102, MS 3101 and MS 3100). A soft rubber disc seats on the connector shell forming a water tight joint.

**No. 9760P** has external threads and is used on all plugs where a coupling nut is provided (MS 3106 and MS 3108).

FOR RECEPTACLES		FOR PLUGS		For Connector Size	Dimensions—Inches								
Cap and Chain	Cap Only	Male Cap and Chain	Male Cap Only		A Threads	B*	C	D*	E	F	G	H	I
9760-8	9760-8G	9760-8P	9760-8PG	8S	1/2—28	5/8	1/2	7/16	21/32	.125	29/16	29/16	.125
9760-10	9760-10G	9760-10P	9760-10PG	10S, 10SL	5/8—24	13/16	5/8	7/16	21/32	.125	29/16	213/16	.125
9760-12	9760-12G	9760-12P	9760-12PG	12, 12S, 12SL	3/4—20	15/16	3/4	7/16	27/32	.125	29/16	313/16	.125
9760-14	9760-14G	9760-14P	9760-14PG	14, 14S	7/8—20	11/16	7/8	7/16	27/32	.125	29/16	313/16	.125
9760-16	9760-16G	9760-16P	9760-16PG	16, 16S	1—20	11/8	1	7/16	27/32	.167	45/8	45/8	.167
9760-18	9760-18G	9760-18P	9760-18PG	18	1 1/8—18	15/16	1 1/8	7/16	27/32	.167	45/8	45/8	.167
9760-20	9760-20G	9760-20P	9760-20PG	20	1 1/4—18	17/16	1 1/4	7/16	27/32	.167	45/8	45/8	.167
9760-22	9760-22G	9760-22P	9760-22PG	22	1 3/8—18	19/16	1 3/8	7/16	27/32	.167	45/8	45/8	.167
9760-24	9760-24G	9760-24P	9760-24PG	24	1 1/2—18	1 11/16	1 1/2	7/16	27/32	.167	45/8	45/8	.167
9760-28	9760-28G	9760-28P	9760-28PG	28	1 3/4—18	1 59/64	1 3/4	1/2	27/32	.167	45/8	45/8	.167
9760-32	9760-32G	9760-32P	9760-32PG	32	2—18	2 3/16	2	1/2	27/32	.190	5 3/4	5 3/4	.260
9760-36	9760-36G	9760-36P	9760-36PG	36	2 1/4—16	2 7/16	2 1/4	1/2	27/32	.190	5 3/4	5 3/4	.260
9760-40	9760-40G	9760-40P	9760-40PG	40	2 1/2—16	2 11/16	2 1/2	1/2	27/32	.190	5 3/4	5 3/4	.260
9760-44	9760-44G	9760-44P	9760-44PG	44	2 3/4—16	2 15/16	2 3/4	1/2	27/32	.190	5 3/4	5 3/4	.260
9760-48	9760-48G	9760-48P	9760-48PG	48	3—16	3 1/8	3	15/32	27/32	.190	5 3/4	5 3/4	.260

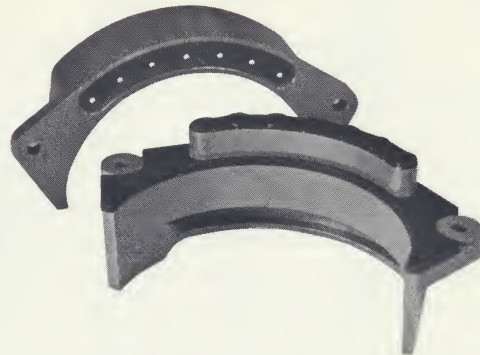
\*B dimension 1/16" less and D dimension 1/64" less for screw machine parts.

## UNUSUAL PROBLEM—EASY ANSWER

**The Problem:** How to connect the deicer heater circuits in a helicopter rotor.

**The Answer:** Call Amphenol Eastern Connector Division.

Eastern Division was able to provide a fast, technically sound approach to a difficult task. The Amphenol Area Division near you can do the same, no matter how elusive the solution may seem. Call us and let us prove it the next time you have an "impossible" job.



## Protective Caps for MS Connectors—97121

**Type 97121-3XX**

For engagement with internal threads of coupling rings.

Expendable polyethylene dust caps provide added protection for precision-built MS connectors during storage and handling, in assembling with other equipment, and after complete assembly into a finished apparatus. Protective caps cover threaded sections of plugs and receptacles; assure against damage to thread from any cause; permit low-cost, attractive coverings which protect contacts and the insulation from dust, dirt and handling damage. When ordering MS connectors, specify MS connectors with protective caps. See ordering instructions below.

**Type 97121-2XX**

For engagement with external threads—for coupling and fitting threads

**How to Order Connectors with Caps Assembled**

In ordering new connectors it is best to arrange to have the connectors arrive at your plant with caps assembled. This will assure you of protection against thread damage, dust and foreign matter in transit, in your stock and on your assembly line until the connectors are finally mated. To order connectors complete with protective caps assembled to both ends,

specify (258) after the connector number; for example, MS 3106A20-20P (258), MS 3102A20-20S (258). For connectors with a protective cap on only the mating end, specify (288) at the end of the part number. For connectors in your stock or on your production line you may order the caps separately by use of the tabulation below.

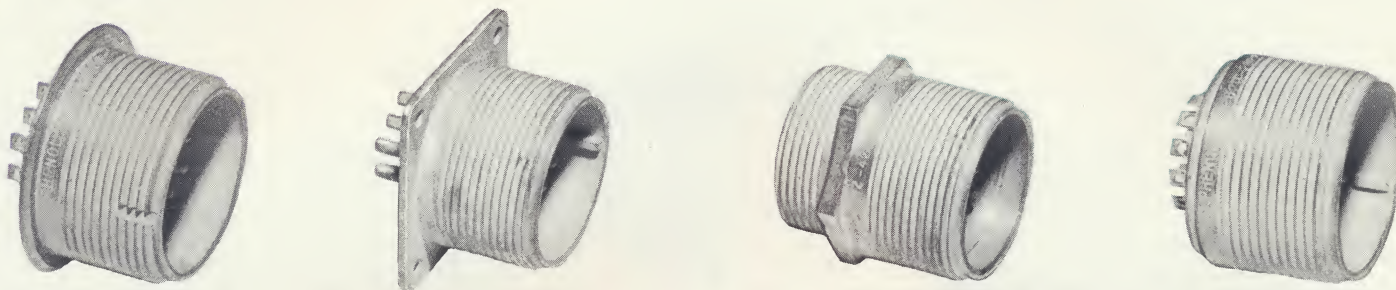
**TYPES AND SIZES REQUIRED**

Con- nector Size	For Type MS3100		For Type MS3101		For Type MS3102		For Type MS3106		For Type MS3108	
	Mating End	Termination End	Mating End	Termination End	Mating End	Termination End	Mating End	Termination End	Mating End	Termination End
8S	—208	—208	—208	—208	—208		—308	—208	—308	—208
10S	—210	—208	—210	—208	—210	—208	—310	—208	—310	—208
10SL	—210	—210	—210	—210	—210	—210	—310	—210	—310	—210
12S-12	—212	—210	—212	—210	—212		—312	—210	—312	—210
14S-14	—214	—212	—214	—212	—214	—212	—314	—212	—314	—212
16S-16	—216	—214	—216	—214	—216	—214	—316	—214	—316	—214
18	—218	—216	—218	—216	—218	—216	—318	—216	—318	—216
20	—220	—219	—220	—219	—220	—218	—320	—219	—320	—219
22	—222	—219	—222	—219	—222	—220	—322	—219	—322	—219
24	—224	—223	—224	—223	—224	—222	—324	—223	—324	—223
28	—228	—223	—228	—223	—228		—328	—223	—328	—223
32	—232	—228	—232	—228	—232		—332	—228	—332	—228
36	—236	—232	—236	—232	—236		—336	—232	—336	—232
40	—240	—236	—240	—236	—240		—340	—236	—340	—236
44	—244	—240	—244	—240	—244		—344	—240	—344	—240
48	—248	—248	—248	—248	—248		—348	—248		

**NOTE:** A complete part number consists of type number 97121 and the size indicated by a dash number such as —208, or —340. Examples of complete part numbers: 97121—208, 97121—340, etc.



Leakage rate less than .1 micron cubic foot per hour



Voltage ratings, salt spray, shock, vibration resistance and mating dimensions meet or exceed requirements of MIL-C-5015. In addition, the leakage rate is less than .1 micron cubic foot of helium per hour when checked by a mass spectrometer at 1 atmosphere pressure differential.

Male contacts are nickel-iron alloy; female contacts are brass; shells are cold rolled steel. Standard finish is electro-tin plate. Thermocouple contacts are also available in certain insert configurations in copper, constantan, iron, chromel and alumel.

### 172 Series

The 172 Series of hermetic seal receptacles is suitable for continuous operation at temperatures as high as +400°F and as low as -67° F, depending on plating limitations.

Utilizing an improved hard glass compression seal, these hermetic seal receptacles offer many features not found in comparable connectors. The 172 Series has an extraordinarily high limit for the softening temperature of the glass seal as well as a complete compression seal. Compressive force of shell against

insert provides ideal leakage protection.

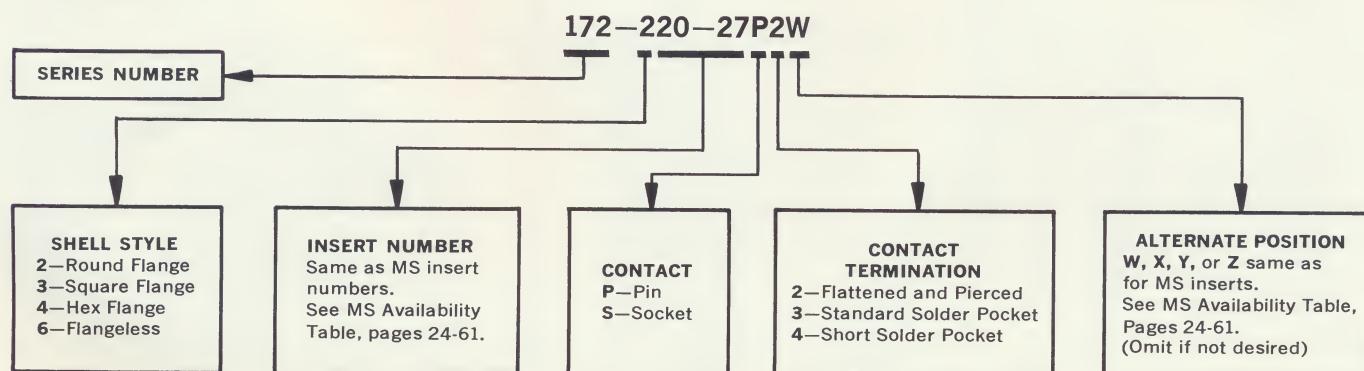
Although most commonly used with male contacts, 172 Series receptacles can now be obtained with female contacts.

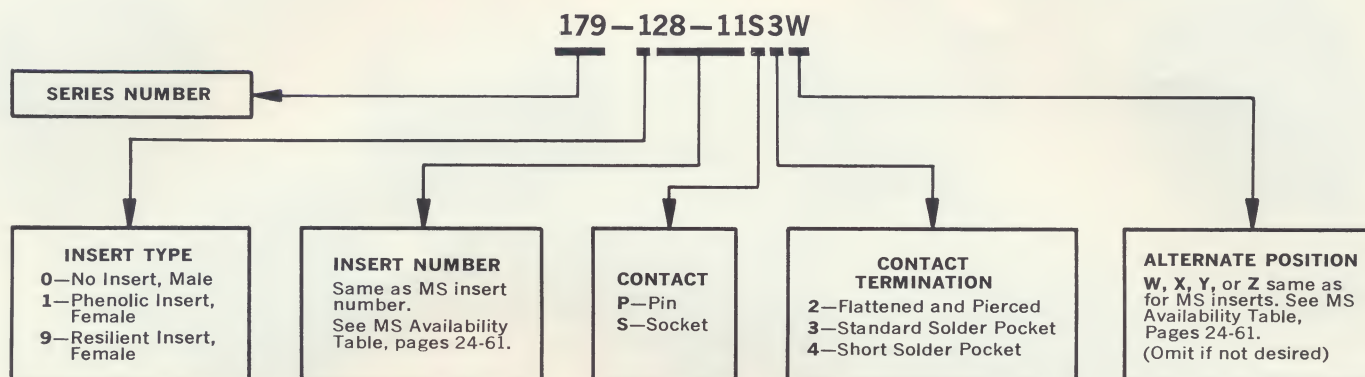
### 179 Series

The 179 Series hermetic bulkhead type receptacles are available with either male or female contacts. The connector is fastened to a panel through a single hole by means of a hex nut. The hermetic seal is maintained by an "O" ring and grooved flange.

### How to Order

1. Select the type of receptacle and shell size you need from the tables on the next two pages.
2. Determine the insert for your requirements from the MS Connector Availability Table, pages 24-61, then check its availability from the 172-179 Insert Availability Table, page 79.
3. Determine the shell style (for 172 Series) or insert type (for 179 Series).
4. Decide on the contact termination you want and on the alternate insert position, if any.
5. Put together the part number as per the following typical example.



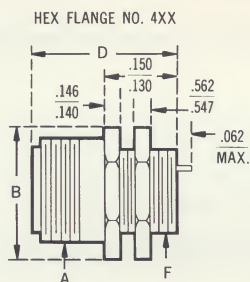


**EXAMPLES:** If you want a 172 Series receptacle with a hex flange, 16S-4 insert, pin contact, and short solder pocket termination, you order 172-416S-4P4. The same receptacle without a flange would be 172-616S-4P4. A 179 Series receptacle like this—that is, 16S-4 insert, pin contact, and short solder pocket termination—but with resilient insert would be 179-916S-4P4.

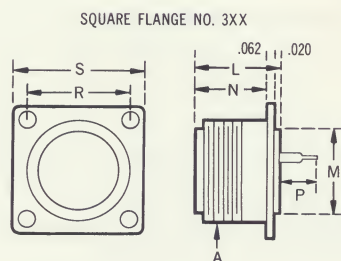
## 172 Series

### Standard Shell Styles and Dimensions (Inches)

All dimensions  $\pm .010$  unless otherwise indicated.



Shell Size	A	L	M	T	P-Contact Type		
					2	3	4
210S-XP	$\frac{5}{8}$ -24	$2\frac{3}{32}$	.490	1	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
210SL-XP	$\frac{5}{8}$ -24	$2\frac{3}{32}$	.625	1	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
212-XP	$\frac{3}{4}$ -20	$2\frac{3}{32}$	.682	$1\frac{3}{32}$	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
214S-XP	$\frac{7}{8}$ -20	$2\frac{3}{32}$	.745	$1\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
216S-XP	1 -20	$2\frac{3}{32}$	.870	$1\frac{9}{32}$	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
218-XP	$1\frac{1}{8}$ -18	$2\frac{3}{32}$	.990	$1\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
220-XP	$1\frac{1}{4}$ -18	$2\frac{9}{32}$	1.120	$1\frac{1}{2}$	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
222-XP	$1\frac{3}{8}$ -18	$3\frac{1}{32}$	1.250	$1\frac{5}{8}$	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$
224-XP	$1\frac{1}{2}$ -18	$3\frac{1}{32}$	1.370	$1\frac{3}{4}$	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$
228-XP	$1\frac{3}{4}$ -18	$3\frac{1}{32}$	1.620	2	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$



Shell Size	A	L	M	N	R	S	P-Contact Type		
							2	3	4
310S-XP	$\frac{5}{8}$ -24	$2\frac{3}{32}$	.499	.637	.718	1.000	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
310SL-XP	$\frac{5}{8}$ -24	$2\frac{3}{32}$	.499	.637	.718	1.000	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
312S-XP	$\frac{3}{4}$ -20	$2\frac{3}{32}$	.655	.637	.812	1.094	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
314S-XP	$\frac{7}{8}$ -20	$2\frac{3}{32}$	.717	.637	.906	1.188	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
316S-XP	1 -20	$2\frac{3}{32}$	.843	.637	.968	1.281	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
318-XP	$1\frac{1}{8}$ -18	$2\frac{9}{32}$	.967	.824	1.062	1.375	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
320-XP	$1\frac{1}{4}$ -18	$2\frac{9}{32}$	1.155	.824	1.156	1.500	$\frac{3}{16}$	$\frac{3}{8}$	$\frac{1}{4}$
322-XP	$1\frac{3}{8}$ -18	$3\frac{1}{32}$	1.250	.887	1.250	1.625	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$
324-XP	$1\frac{1}{2}$ -18	$3\frac{1}{32}$	1.374	.887	1.375	1.750	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$
328-XP	$1\frac{3}{4}$ -18	$3\frac{1}{32}$	1.624	.887	1.562	2.000	$\frac{7}{32}$	$\frac{3}{8}$	$\frac{1}{4}$

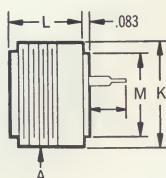


## 172 Series

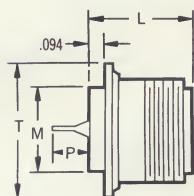
### Standard Shell Styles and Dimensions (Inches)

All dimensions  $\pm .010$  unless otherwise indicated.

FLANGELESS NO. 6XX



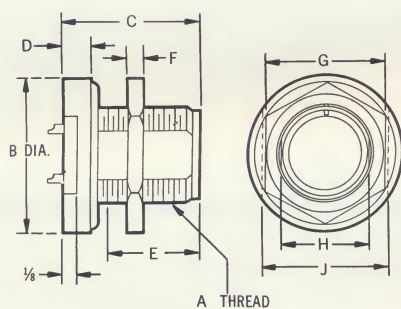
ROUND FLANGE NO. 2XX  
A THREADS



Shell Size	A	L	M	K	P-Contact Type		
					2	3	4
610S-XP	5/8-24	2 3/32	.499	.625	3/16	3/8	1/4
610SL-XP	5/8-24	2 3/32	.499	.625	3/16	3/8	1/4
612S-XP	3/4-20	2 3/32	.655	.750	3/16	3/8	1/4
614S-XP	7/8-20	2 3/32	.717	.875	3/32	3/8	1/4
616S-XP	1 -20	2 3/32	.843	1.000	3/16	3/8	1/4
618-XP	1 1/8-18	2 9/32	.967	1.125	3/16	3/8	1/4
620-XP	1 1/4-18	2 9/32	1.155	1.250	3/16	3/8	1/4
622-XP	1 3/8-18	3 1/32	1.250	1.375	7/32	3/8	1/4
624-XP	1 1/2-18	3 1/32	1.374	1.500	7/32	3/8	1/4
628-XP	1 3/4-18	3 1/32	1.624	1.750	7/32	3/8	1/4

Shell Size	A	B	D	F
410S-XP2	5/8-24	5/8	1.218	1/2-18
410SL-XP2	5/8-24	5/8	1.218	1/2-28
412S-XP2	3/4-20	3/4	1.218	5/8-24
414S-XP2	7/8-20	7/8	1.218	3/4-20
416S-XP2	1 -20	1	1.218	7/8-20
418-XP2	1 1/8-18	1 1/8	1.406	1 -20
420-XP2	1 1/4-18	1 1/4	1.406	1 1/8-18
422-XP	1 3/8-18	1 3/8	1.468	1 1/4-18
424-XP2	1 1/2-18	1 1/2	1.468	1 3/8-18
428-XP2	1 3/4-18	1 3/4	1.468	1 5/8-18

## 179 Series



Shell Size	A Thread	B	C	D	E	F	G	H	J
10	5/8-24 NEF	1 3/16	1 1/16	1 7/64	1 1/16	1/8	3/4	.572	1 5/16
12	3/4-20 UNEF	1 5/16	1 1/16	1 7/64	1 1/16	1/8	7/8	.686	1 1/16
14	7/8-20 UNEF	1 7/16	1 1/16	1 7/64	1 1/16	1/8	1	.810	1 3/16
16	1 -20 UNEF	1 9/16	1 1/16	1 7/64	1 1/16	1/8	1 1/8	.936	1 5/16
18	1 1/8-18 NEF	1 11/16	1 1/2	1 7/64	1 3/32	3/16	1 1/4	1.052	1 7/16
20	1 1/4-18 NEF	1 13/16	1 1/2	1 7/64	1 3/32	3/16	1 3/8	1.178	1 9/16
22	1 3/8-18 NEF	1 15/16	1 1/2	1 7/64	1 3/32	3/16	1 1/2	1.300	1 11/16
24	1 1/2-18 NEF	2 1/16	1 1/2	1 7/64	1 3/32	3/16	1 5/8	1.428	1 7/8
28	1 3/4-18 NEF	2 5/16	1 1/2	1 7/64	1 3/32	3/16	1 7/8	1.678	2 1/16
32	2 -18 UNEF	2 9/16	1 1/2	1 7/64	1 3/32	3/16	2 1/8	1.928	2 5/16
36	2 1/4-16 NEF	2 13/16	1 1/2	1 7/64	1 3/32	3/16	2 3/8	2.169	2 9/16

### Insert Availability—172 and 179 Series

Insert Number	Contacts	Insert Number	Contacts	Insert Number	Contacts	Insert Number	Contacts	Insert Number	Contacts	Insert Number	Contacts
10S-2P	1	14S-6P	6	18-1P	10	*20-33P	11	28-2P	14	*36-7	40
10SL-3P	3	14S-7P	3	18-4P	4	*22-9P	3	28-11P	22	*36-8	46
10SL-4P	2	14S-9P	2	18-12P	6	22-14P	19	28-12P	26	36-10	48
12S-3P	2	*16-13P	2	20-7P	8	22-19P	14	28-15P	35	*36-15	35
14S-1P	3	16S-1P	7	20-15P	7	24-5P	16	*28-17P	15		
14S-2P	4	16S-4P	2	20-27P	14	*24-10P	7	28-21P	37		
14S-5P	5	16S-8P	5	20-29P	17	24-28P	24	32-7	28		

\*Denotes resilient insert not available. Phenolic insert available in all cases.

*For applications where rugged dependability is a must  
Widely used in Missile Ground Support Equipment*



Size	89-1		89-2		89-5		Min. Chassis Hole Dia.	Max. Chassis Thickness
	Lgth.*	Dia.	Lgth.	Dia.	Lgth.*	Dia.		
22	5 $\frac{1}{16}$	1 $\frac{21}{32}$	1 $\frac{13}{32}$	1 $\frac{7}{8}$	5	1 $\frac{3}{4}$	1 $\frac{25}{64}$	$\frac{5}{16}$
28	5 $\frac{1}{16}$	2 $\frac{1}{32}$	1 $\frac{13}{32}$	2 $\frac{1}{4}$	5	2 $\frac{1}{8}$	1 $\frac{49}{64}$	$\frac{5}{16}$
32	5 $\frac{3}{16}$	2 $\frac{11}{32}$	1 $\frac{13}{32}$	2 $\frac{1}{2}$	5 $\frac{1}{8}$	2 $\frac{3}{8}$	2 $\frac{1}{64}$	$\frac{5}{16}$

\*Includes cable clamp.

Designed to meet stringent field conditions in government services, the AMPHENOL 89 Series connectors are doing an outstanding job in all parts of the world.

Rugged and completely waterproof, 89 Series connectors provide efficient and dependable service even when entirely submerged in mud, ice, water or mire. The anodized or cadmium plated olive drab chromate finish and the built-in rubber cable clamp provide maximum resistance to the elements.

Weatherproofing at the cable is accomplished by an internal rubber gasket in the cable clamp which is expanded as the gland nut is drawn tight. Cable clamps in various sizes are available for each shell size, as listed.

### Ideal for Outdoor Use

The use of these connectors in missile ground systems and support equipment symbolizes their proved ruggedness, dependability and efficiency. In the outdoor requirements of oil well equipment, railroads, radio and television stations, harbors and marine applications—wherever waterproof multi-wire electrical connectors are required—the AMPHENOL 89 Series will give outstanding service.

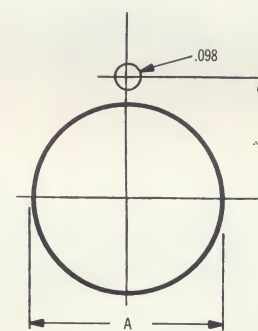
### Long Coupling Rings

To facilitate handling in rough weather, the coupling rings are extra long to provide full hand grip; they are heavily grooved to prevent slipping.

Flats are conveniently located for positive and easy assembly and disassembly of plugs, receptacles and fittings with standard open-end wrenches—important for field servicing.

### Compact and Lightweight

Shells and cable clamps of the 89 Series connectors are machined from top quality aluminum bar stock. This provides far greater strength than it is possible to obtain when die cast methods are employed. At the same time, weight is kept to a minimum. Inserts are made of a dielectric material possessing excellent mechanical and electrical properties. Contacts in the inserts are the AMPHENOL superior non-rotating type, silver-plated.



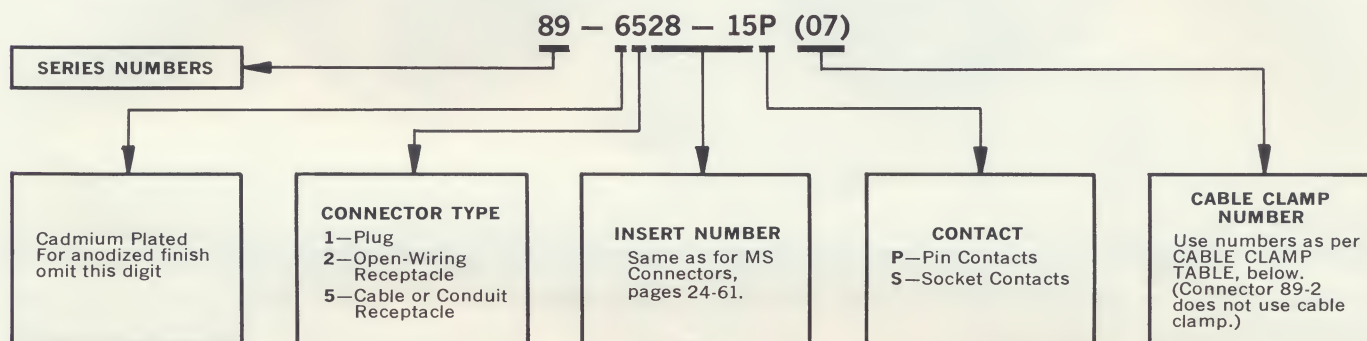
FOR PANEL MOUNTING RECEPTACLE

SIZE	Dimensions—Inches	
	A	B
	+ .010 - .000	± .002
22	1.385	.796
28	1.760	.984
32	2.010	1.109



## How to Order 89 Series Connectors

1. Select the 89 series connector to match the application: plug, open-wiring receptacle, or cable or conduit receptacle.
2. Select the insert. AMPHENOL 89 Series inserts have the same size and arrangement as MS connector inserts of the same designation. Select the insert to meet your requirements from the MS Connector Availability Table, pages 24-61. Then check this
3. From the table of cable clamps below find the cable clamp to fit the cable or conduit you will use.
4. Put together the part number as per the following typical example:



**EXAMPLES:** To get a plug with a 32-6 insert, pin contacts, and cable clamp that will take a .313" to .375" (tolerance included) cable jacket, you would order 89-132-6P(06). To get the same plug cadmium plated, you would order 89-6132-6P(06). To get the same cadmium plated plug with socket contacts, you would order 89-6132-6S(06).

If you don't want the cap and chain, add (105) to the part number. For example, to order the same cadmium plated plug with socket contacts as above but without cap and chain, you would order 89-6132-6S(06)(105).

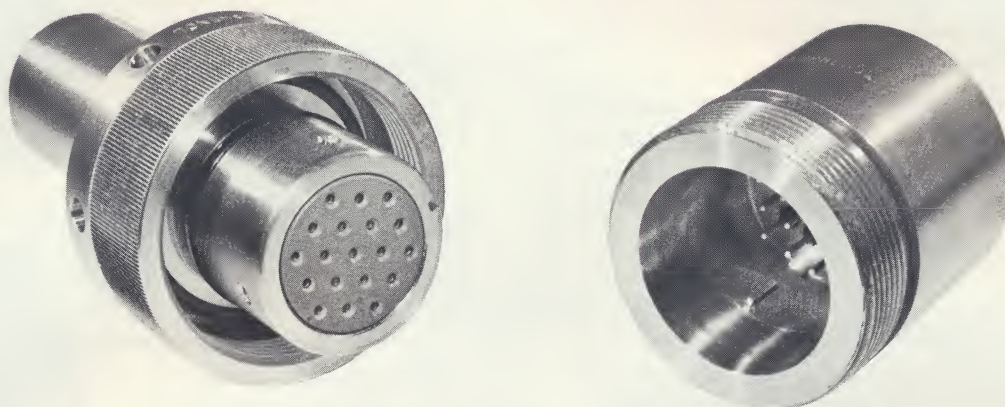
### 89 SERIES INSERT AVAILABILITY

Insert Number	No. of Contacts	Insert Number	No. of Contacts	Insert Number	No. of Contacts	Insert Number	No. of Contacts	Insert Number	No. of Contacts	Insert Number	No. of Contacts
22-1	2	22-14	19	22-27	9	28-7	2	28-21	37	32-8	30
22-2	3	22-15	6	22-28	7	28-8	12	28-22	6	32-9	14
22-3	2	22-16	9	22-29	7	28-9	12	28-410	4	32-10	7
22-4	4	22-17	9	22-33	7	28-10	7	28-833	7	32-12	15
22-5	6	22-18	8	22-34	5	28-11	22	28-840	4	32-13	23
22-6	3	22-19	14	22-36	8	28-12	26	28-880	3	32-15	8
22-7	1	22-20	9	22-404	8	28-14	11	32-1	5	32-17	4
22-8	2	22-21	3	28-1	9	28-15	35	32-2	5	32-101	12
22-9	3	22-22	4	28-2	14	28-16	20	32-3	9	32-102	14
22-10	4	22-23	8	28-3	3	28-17	15	32-4	14	32-414	52
22-11	2	22-24	6	28-4	9	28-18	12	32-5	2		
22-12	5	22-25	3	28-5	5	28-19	10	32-6	23		
22-13	5	22-26	7	28-6	3	28-20	14	32-7	35		

### CABLE CLAMPS

Cable Clamp No.	Will Take Cable O.D. Of	Mates With Connector Size 22 28 32	Cable Clamp No.	Will Take Cable O.D. Of	Mates With Connector Size 22 28 32	Cable Clamp No.	Will Take Cable O.D. Of	Mates With Connector Size 22 28 32
(04)	.188 to .250	x x x	(11)	.625 to .687	x x x	(18)	1.063 to 1.125	x x
(05)	.250 to .312	x x x	(12)	.688 to .750	x x x	(19)	1.125 to 1.187	x
(06)	.313 to .375	x x x	(13)	.750 to .812	x x	(20)	1.188 to 1.250	x
(07)	.375 to .437	x x x	(14)	.813 to .875	x x	(21)	1.250 to 1.312	x
(08)	.438 to .500	x x x	(15)	.875 to .937	x x	(22)	1.313 to 1.375	x
(09)	.500 to .562	x x x	(16)	.938 to 1.000	x x			
(10)	.563 to .625	x x x	(17)	1.000 to 1.062	x x			

Clearance between maximum cable O.D. and minimum clamp I.D. has been allowed.

**Environmentally Sealed—171 Series***Waterproof and pressure-proof—Withstand in excess of 5000 psig*

AMPHENOL 171 Series Submarine Connectors provide waterproof and pressure-proof electrical connections through submarine pressure hulls to such external electronic devices as sonar transducers. They are suitable for use in any high pressure application where a corrosive atmosphere is present and a sealed connector is desired. Meeting or exceeding all requirements of MIL-C-22539 (SHIPS), the connectors consist of a hermetically sealed stainless steel receptacle and mating non-hermetic stainless steel plug in 7 insert arrangements and 4 sizes.

**Materials**

Besides using stainless steel for the shells, 171 Series Connectors employ other selected materials to assure corrosion resistance. Plug coupling ring is "K" monel; washer and set screws are stainless steel. Plug dielectric material is glass-filled diallyl phthalate. Both pin and socket contacts are "hard" gold-over-copper plated.

**Special Variations**

Because of its unique pressure and environmental capabilities, the 171 Series finds widespread use beyond submarine applications. To aid in these special applications, AMPHENOL has, for example, designed and manufactured 171 Series Connectors with round "O" ring flanges and hex nut mounting, some of which accept mating plugs on both ends.

Environmental seal in mated connectors is achieved by means of 2 shell "O" rings, individual contact "O" rings and a molded rubber boot on the plug, and AMPHENOL compression hermetic seal in the receptacle.

When properly mated and sealed, 171 Series Connectors are capable of withstanding in excess of 5000 psig. The receptacle alone has been tested without failure in pressures well beyond 15000 psig.

Insulation resistance is 5000 megohms, minimum; high potential is 1000 VRMS.

**ORDERING INFORMATION**

AMPHENOL Number		Contacts		Cable Entry Dia.	Recommended Cable Usage	
Plug	Receptacle	#12	#16		Type	Max. Dia.
171-2	171-1	3	—	.640	—	—
171-9	171-1	3	—	.515	DSS-3-4	.500
171-25	171-1	3	—	.640	RG-57A/U	
171-26	171-1	3	—	.640	RG-57A/U	
171-30	171-1	3	—	.406	DSS-2	.390
171-4	171-3	4	—	.515	TSS-4	.500
171-31	171-37	5	—	.640	FSS-4	.625
171-6	171-5	—	8	.515	FSS-2	.500
171-7	171-5	—	8	.640	MSS-6	.625
171-8	171-5W	—	8	.640	MSS-6	.625
171-32	171-38	—	19	.859	MHFF-14	.844
171-33	171-38	—	19	1.015	MHFF-19	.994
171-34	171-39	—	37	.750	TSP-11	.735
171-35	171-39	—	37	1.125	MHFF-24	1.120
171-36	171-39	—	37	1.203	MHFF-30	1.194
100-4515-S	100-4515-16	—	68	1.078	TSP-31	1.062

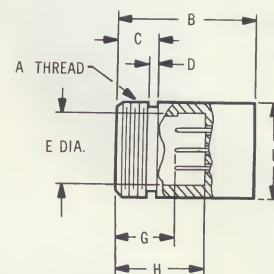
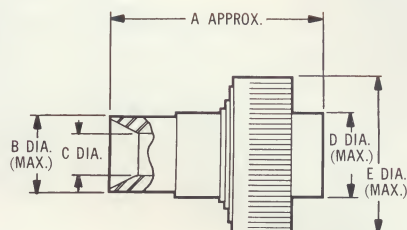
*See your nearest AMPHENOL representative for a prompt and thorough study of any special variations you may require.*



## 171 Series Standard Inserts and Dimensions

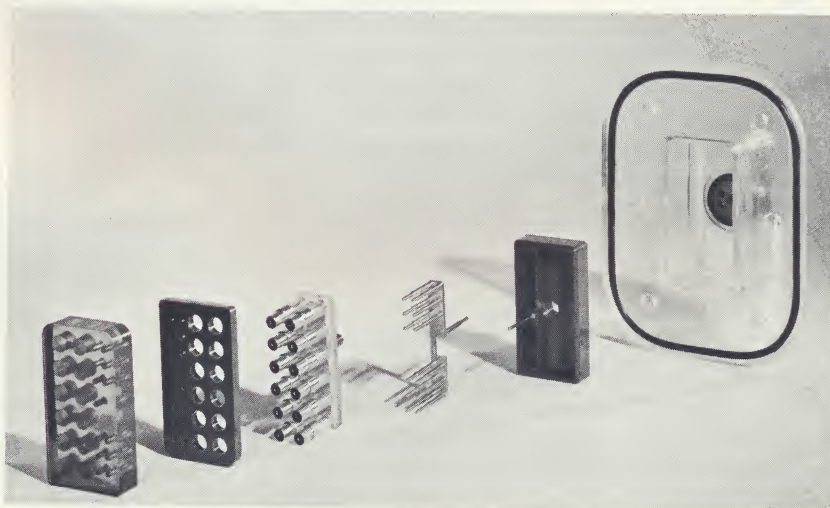
### PLUG ASSEMBLY

AMPHENOL Number	Con- tacts	A	B	C	D	E
171-2	3	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-9	3	4 $\frac{7}{8}$	1.002	.515	1.123	2.010
171-25	3	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-26	3	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-30	3	4 $\frac{7}{8}$	1.002	.406	1.123	2.010
171-4	4	4 $\frac{7}{8}$	1.002	.515	1.123	2.010
171-31	5	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-6	8	4 $\frac{7}{8}$	1.002	.515	1.123	2.010
171-7	8	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-8	8W	4 $\frac{7}{8}$	1.002	.640	1.123	2.010
171-32	19	5 $\frac{1}{4}$	1.498	.859	1.623	2.760
171-33	19	5 $\frac{1}{4}$	1.498	1.015	1.623	2.760
171-34	37	5 $\frac{3}{8}$	1.686	.750	2.122	3.260
171-35	37	5 $\frac{3}{8}$	1.686	1.125	2.122	3.260
171-36	37	5 $\frac{3}{8}$	1.686	1.203	2.122	3.260
100- 4515-S	68	5 $\frac{3}{4}$	1.686	1.078	2.747	4.010



### RECEPTACLE ASSEMBLY

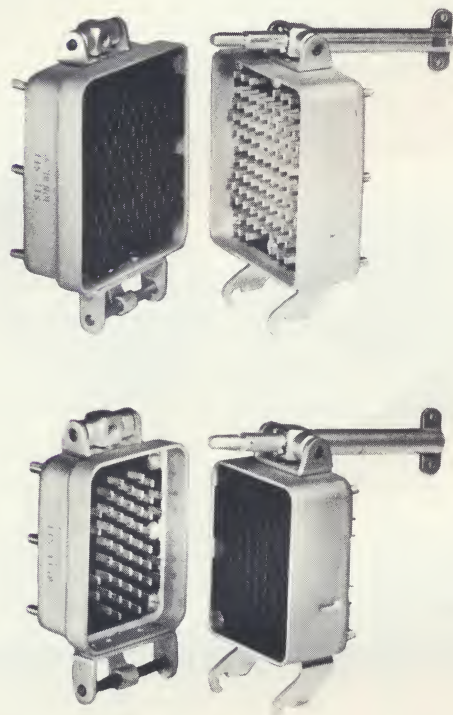
AMPHENOL Number	Con- tacts	A (2A)	B max.	C nom.	D nom.	E min.	F max.	G min.	H nom.
171-1	3	1 $\frac{5}{8}$ -12N	2.385	.810	.190	1.125	1.628	.938	1.627
171-3	4	1 $\frac{5}{8}$ -12N	2.385	.810	.190	1.125	1.628	.938	1.627
171-37	5	1 $\frac{5}{8}$ -12N	2.385	.810	.190	1.125	1.628	1.157	1.627
171-5	8	1 $\frac{5}{8}$ -12N	2.385	.810	.190	1.125	1.628	1.157	1.627
171-5W	8	1 $\frac{5}{8}$ -12N	2.385	.810	.190	1.125	1.628	1.157	1.627
171-38	19	2 $\frac{3}{8}$ -12N	2.505	.810	.190	1.625	2.380	1.157	1.627
171-39	37	2 $\frac{7}{8}$ -12N	2.505	.810	.190	2.125	2.878	1.157	1.627
100- 4515-16	68	3 $\frac{1}{2}$ -12N	2.635	.810	.190	2.750	3.510	1.157	1.627



AMPHENOL engineers like nothing better than working out seemingly impossible design problems. As a case in point, there was the fuel gage connector we worked on with Boeing Co. The exploded model that is pictured will give you an idea of the complexity of design involved; but the performance requirements are really impressive. The connector is for use on the Boeing 727 aircraft in shielded capacitance bridge circuits measuring engine oil and jet fuel. It must perform perfectly for a minimum 30,000 hours under exposure to vibration, moisture, dust, sand, metallic particles, hydraulic fluid, oil, and jet fuel. It must do so at altitudes ranging from sea level to 67,000 feet and ambient temperatures from -67°F to +250°F. AMPHENOL met the challenge successfully. We would appreciate an opportunity to work with you on special design problems.



*Quick make and break for large number of circuits*

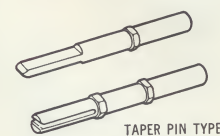
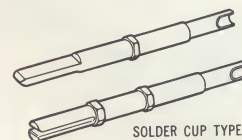
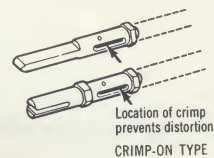
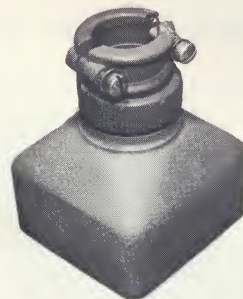


115 Series connectors provide a quick and convenient means of making and breaking a large number of circuits. Particularly useful in missile and aircraft test equipment, they are available in 50 and 100 contact configurations, nominally rated at 750 V. RMS, 60 CPS at sea level.

The vise action of the screw lock provides the leverage for easily attaching and disengaging the plug. The contact alloys and finishes were carefully selected for top performance and long-lasting operation. The two-piece inserts have molded-in numbers to facilitate wiring and checking circuits. Contacts and inserts are so designed that, when assembled, the contacts are free floating for alignment in mating but cannot rotate.

AMPHENOL 115 Series connectors are available in a choice of three types of contacts—crimp-on, extended solder cup, or taper pin contacts. The last take taper pin terminals for making solderless connections. When using the crimp-on contacts, note the correct location to make the crimp so that the blade or tines of the contacts will not be distorted. The crimp type can also be used as a buried solder type.

When using the crimp-on contacts, string the wires through the plug or receptacle shell and through the rear insulator a row or two at a time and attach the contacts. After wires are attached to all the contacts, a pull on the wires will seat the contacts in their nests in the rear insulator. Before assembling the front insert align the contacts in both directions with a bladed object such as a steel ruler. When the contacts are properly aligned, the front insert can be quickly assembled and the complete subassembly attached to the shell with machine screws. The assembly screws can be used with hex nuts and washers for attaching to chassis or mounting plate.

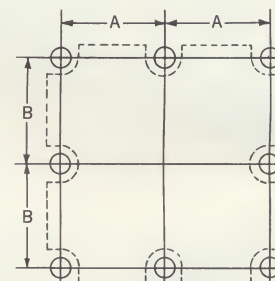


#### Dimensions (Inches)

The approximate dimensions of the shells exclusive of attaching mechanisms are  $3\frac{1}{2}$ " high,  $3\frac{1}{2}$ " wide and  $1\frac{1}{32}$ " deep for the 100 contact connectors and  $2\frac{31}{32}$ " high,  $2\frac{1}{4}$ " wide and  $1\frac{1}{32}$ " deep for the 50 contact connectors.

Contacts	A	B
50	.859	1.218
100	1.359	1.490

Receptacle Mounting—the 8-32 assembly screws are located as shown. Panel must be cut out for wire lead-in at the back of the receptacle (indicated approximately by dotted lines).



#### ORDERING INFORMATION

##### 50 CONTACT CONNECTORS

	With Taper Pin Contacts	With Solder Cup Contacts
Male Plug	115-114P(432)	115-114P
Female Receptacle	115-115S(432)	115-115S
Female Plug	115-114S(432)	115-114S
Male Receptacle	115-115P(432)	115-115P

##### 100 CONTACT CONNECTORS

	With Crimp-On Contacts	With Taper Pin Contacts	With Solder Cup Contacts
Male Plug	115-30P	115-30P(432)	115-30P-1000
Female Receptacle	115-31S	115-31S(432)	115-31S-1000
Female Plug	115-30S	115-30S(432)	115-32S
Male Receptacle	115-31P	115-31P(432)	115-32P

#### CABLE CLAMPS

Aluminum; AN-type clamp accommodates  $1\frac{1}{4}$ " dia. cable bundle.

For Size	Number
50 Contacts	115-1391
100 Contacts	115-949



## WATERPROOF POWER CONNECTORS—164 Series



Developed for use on Signal Corps vehicular radio equipment, these compact connectors meet MIL-C-55181 as proposed and are a variation of connectors produced to MIL-C-12520B.

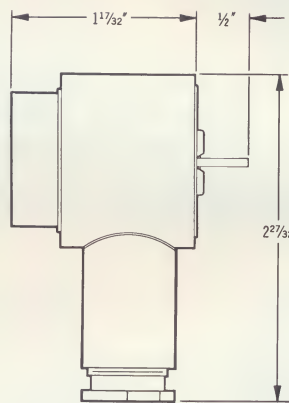
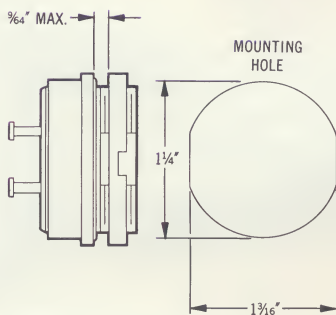
**Field Serviceable, Compact, Rugged**

These connectors can be field serviced and still remain waterproof. Neoprene face inserts and "O" rings throughout serve to waterproof and pressurize both plugs and receptacles. The field-serviceable cable clamp seals the plug to the cable jacket.

The receptacle shells of these small size connectors are stainless steel. Plug housings are brass, and plug nose shells are stainless steel. Inserts are of monobloc construction, providing maximum strength and durability.

**Quick Connect-Disconnect Under Adverse Conditions**

Plug and receptacle are separated or drawn together by a double lead screw running through the center of the connector. The screw is operated by a wing blade which folds down against the back of the plug. The connector is polarized for quick and sure mating.

**SPECIFICATIONS**

Dielectric Withstanding Voltage—  
1500 VRMS at 60 cps (High potential test)

Operating Temperature—  
55°C to + 85°C

Contact Rating—#20 7.5 amps  
#12 35 amps

Contacts—Poke Home, featuring turret tail terminations on #12 contacts and solder pockets on #20 contacts.

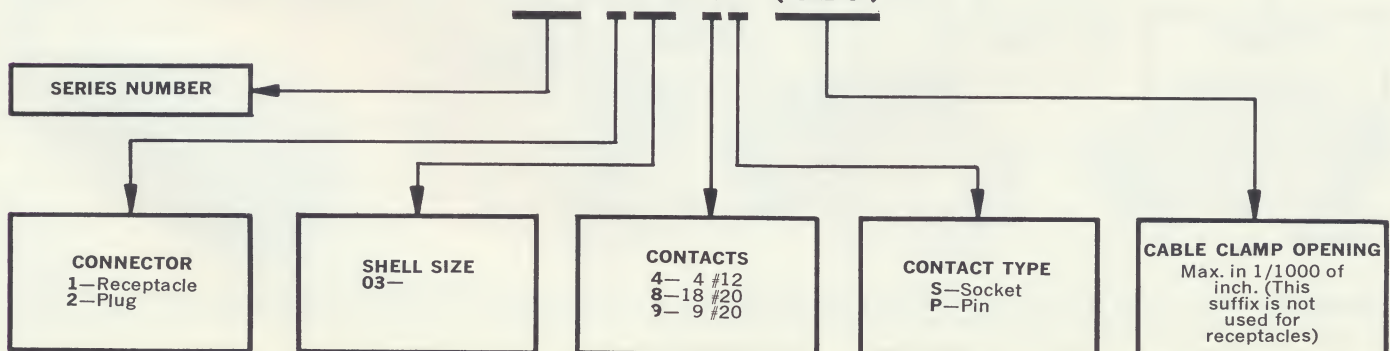
Socket contacts are hooded.

**ORDERING INFORMATION**

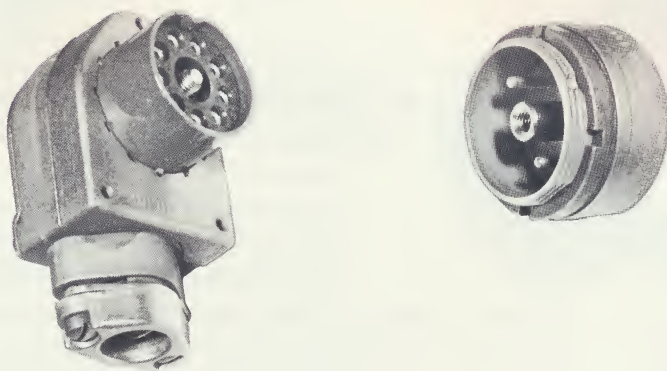
PLUGS			MATING RECEPTACLES	
AMPHENOL Number	Signal Corps Drawing No.	Number of Contacts	AMPHENOL Number	Signal Corps Drawing No.
164-203-4P(520)	SC-DL-346250	4 #12	164-103-4S	SM-C-414992
164-203-4S(520)	SC-DL-346249	4 #12	164-103-4P	SM-C-414990
164-203-9P(340)	SC-DL-346248	9 #20	164-103-9S	SM-C-415061
164-203-8P(520)	SC-DL-346247	18 #20	164-103-8S	SM-C-414881

**BASIS FOR PART NUMBERING**

1 6 4 - 2 0 3 - 4 S ( 5 2 0 )



*Quick connect-disconnect under most adverse conditions*



### Field Serviceable Types

These connectors, developed primarily for Signal Corps use (MIL-C-12520A), are watertight, take very little space, and provide quick connect and disconnect operation under the most adverse handling conditions.

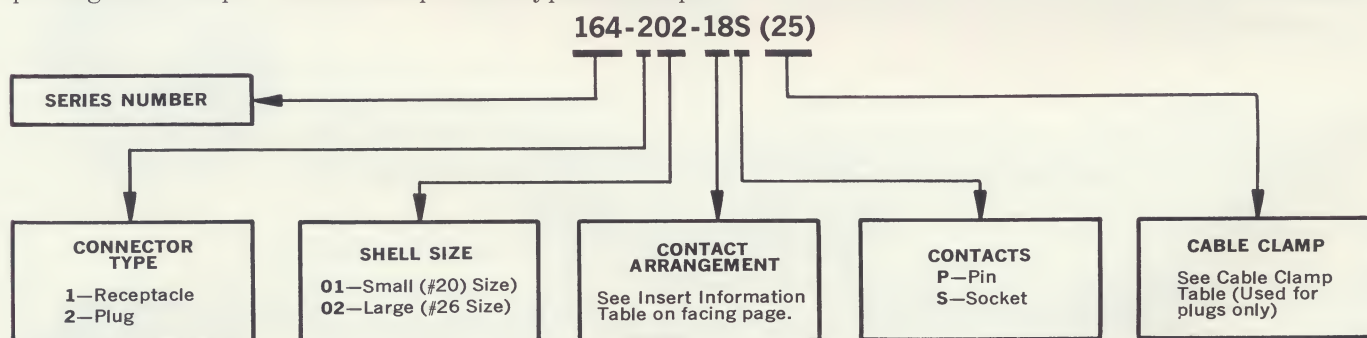
They are separated or drawn together by a double lead screw thread running through the connector. The screw is operated by a wing blade in the back of the plug (Pat. No. 2,798,404). Normally this blade folds down against the back of the plug and overhangs to permit its being pulled out into operating position easily, even by a mittened hand.

Receptacles are waterproofed and pressure sealed by gaskets. The plugs have a field-serviceable cable clamp which effects a watertight seal (Pat. No. 2,823,248) and a three-piece shell construction which permits easy wiring in the field.

Pin or socket type inserts are available for either plugs or receptacles. The connector on the live side of the connection should have a socket insert. Inserts are of one-piece construction providing maximum strength and durability.

### How to Order Waterproof Power Plugs

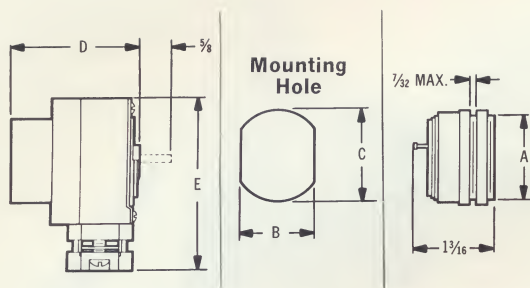
Select the type of connector, shell size, insert configuration, contact type, and clamp for your application. Then put together the part number as per this typical example:



See page 89 for protective cap and chain assemblies.

**EXAMPLES:** To get a large shell receptacle with 19 #16 pin contacts, you would order 164-102-20P. To get a plug with a cable clamp to take a cable O.D. of .573 to .656, you would order 164-202-20P(21).





AMPHENOL No.	A	B	C	D	E
164-101	1 $\frac{1}{4}$	1 $\frac{3}{16}$	1 $\frac{17}{64}$		
164-102	1 $\frac{5}{8}$	1 $\frac{1}{16}$	1 $\frac{41}{64}$		
164-201 for cable O.D. of .261 to .531				1 $\frac{11}{16}$	2 $\frac{53}{64}$
164-201 for cable O.D. of .511 to .781				1 $\frac{15}{16}$	2 $\frac{53}{64}$
164-202 for cable O.D. of .511 to .781				1 $\frac{7}{8}$	3 $\frac{3}{32}$
164-202 for cable O.D. of .761 to 1.031				2 $\frac{1}{8}$	3 $\frac{7}{32}$

#### CABLE CLAMP INFORMATION

Cable Clamp No.	Will Take Cable O.D. Of	Available In Plug Size	
		01	02
11	.261 to .343	X	
13	.323 to .406	X	
15	.386 to .468	X	
17	.448 to .531	X	
19	.511 to .593	X	X
21	.573 to .656	X	X
23	.636 to .718	X	X
25	.698 to .781	X	X
27	.761 to .843		X
29	.823 to .906		X
31	.866 to .968		X
33	.948 to 1.031		X

**NOTE:** Clearance between max. cable O.D. and min. clamp I.D. has been allowed.

#### INSERT INFORMATION

Plugs		Mating Receptacles		Contacts	Current Rating	Voltage Rating
AMPHENOL Number	Signal Corps Number	AMPHENOL Number	Signal Corps Number			
164-201-1S 1P	CS-1320-(1)(S) (P)	164-101-1P 1S	CS-2020-(1)(P) (S)	4 #12	35 amps	1000V. RMS
164-201-2S 2P		164-101-2P 2S		2 #12	35 amps	1000V. RMS
164-201-3S 3P	CS-1320-(2)(S) (P)	164-101-3P 3S	CS-2020-(2)(P) (S)	9 #16	20 amps	1000V. RMS
164-202-5S 5P	CS-1326-(1)(S) (P)	164-102-5P 5S	CS-2026-(1)(P) (S)	14 #16	20 amps	1000V. RMS
164-202-6S 6P		164-102-6P 6S		12 #16 2 #12	20 amps 35 amps	1000V. RMS
164-202-7P		164-102-7S		14 #16 2 Hi-volt	20 amps 20 amps	1000V. RMS 2500V. RMS
164-202-18S 18P	CS-1326-(2)(S) (P)	164-102-18P 18S	CS-2026-(2)(P) (S)	4 #8	60 amps	1000V. RMS
164-202-20S 20P	CS-1326-(3)(S) (P)	164-102-20P 20S	CS-2026-(3)(P) (S)	19 #16	20 amps	1000V. RMS
164-202-23S 23P	CS-1326-(5)(S) (P)	164-102-23P 23S	CS-2026-(5)(P) (S)	30 #.050"	10 amps	1000V. RMS

**NOTE:** Correct cable clamp number must be added to plug part numbers.

Compact • waterproof • quick mating



## Field Serviceable Types

Although the 164 Series audio connectors were developed for Signal Corps communications equipment, they are being ordered in increasing numbers for commercial applications where a compact, waterproof, quick mating connector is required.

AMPHENOL waterproof audio connectors are rated at 500 volts RMS at 1 Amp. with less than 3 milli-volt drop—adequate for all speech and control circuits.

The bayonet type locking mechanism for quick connect-disconnect is vibration-proof. The 25° rotation from unlocked to locked positions gives a self-wiping contact action. The low voltage drop contacts are spring-loaded so that even after years of heavy service

there is a positive connection between mated contacts. Plugs and receptacles can be either male or female.

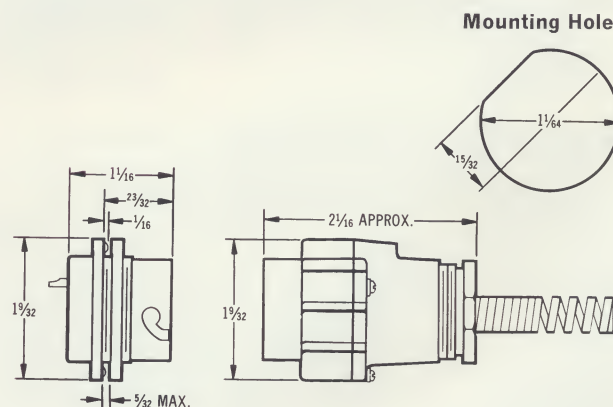
164 series audio connectors feature a watertight seal which provides full protection against water leakage up to 10 foot submersion.

Audio plugs are waterproofed by means of pressure sealing rubber gaskets used in conjunction with the two-piece body and the cable clamp so that they can be field serviced and still remain fully waterproof. AMPHENOL 164 Series audio connectors meet the Signal Corps requirements of specification MIL-C-10544A (Amendment No. 3).

### ORDERING INFORMATION

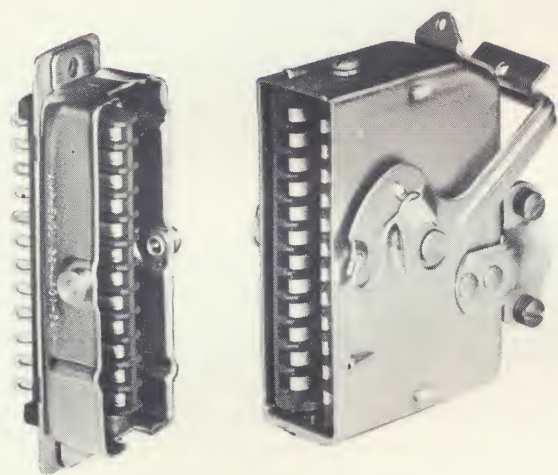
AMPHENOL Number	Signal Corps Number	Description
164-28	U-77/U	10 contact male plug
164-30	U-78/U	10 contact female plug
164-7J	U-79/U	10 contact female receptacle
164-31	U-126/U	10 contact male receptacle
164-28-1000	U-161/U	10 contact male plug*
164-30-1000	U-162/U	10 contact female plug*

\*For use with taper pin terminals.







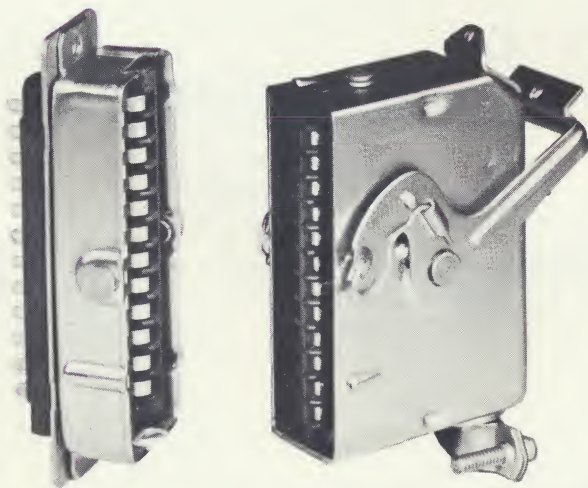
**Blue Ribbon 26 Series****Barrier Polarization Type with Latch-Type Keyed Shells**

Designed for applications where there is severe vibration. A wide selection of polarization positions permits multiple installations on a single panel without danger of mismatching. For increased safety, latches have provision for safety wiring.

Two plug types are available—the 26-4300 series, and the 26-4500 series. Each type mates with 26-4400 series receptacles. Plugs of the 26-4300 series have a cable outlet mounted at the shell top. Plugs of the 26-4500 series are designed for limited space applications and have the cable outlet side-mounted on the shell.

Both receptacles and plugs have nickel-plated brass shells, and are supplied with either male or female inserts. To order, add P to the part number for a male insert, S for female insert. The part numbers for the connectors available are listed in the table on the facing page. Example: To get an 8-contact plug with side cable entry and female insert, order 26-4501-8S.

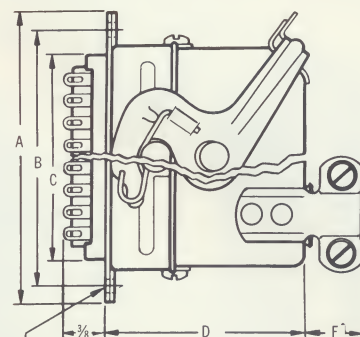
Connectors can be furnished with adapters for contact taper pin assembly. Please write for details.



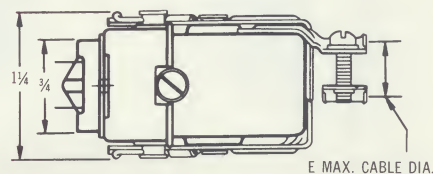


# AVAILABILITY AND ORDERING INFORMATION

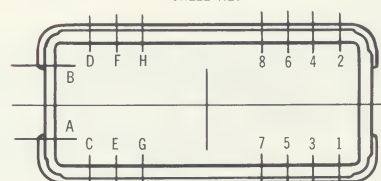
Plugs	Plugs	Contacts	Shell Letters	Keys Numbers	Mating Receptacles
26-4301-8	26-4501-8	8	A	1	26-4401-8
26-4302-8	26-4502-8	8	A	2	26-4402-8
26-4303-8	26-4503-8	8	B	1	26-4403-8
26-4304-8	26-4504-8	8	B	2	26-4404-8
26-4301-16	26-4501-16	16	A-C	3-6	26-4401-16
26-4302-16	26-4502-16	16	A-D	2-5	26-4402-16
26-4303-16	26-4503-16	16	A-E	5-6	26-4403-16
26-4304-16	26-4504-16	16	A-F	4-5	26-4404-16
26-4305-16	26-4505-16	16	B-C	1-6	26-4405-16
26-4306-16	26-4506-16	16	B-D	1-2	26-4406-16
26-4307-16	26-4507-16	16	B-E	1-4	26-4407-16
26-4308-16	26-4508-16	16	B-F	2-3	26-4408-16
26-4301-24	26-4501-24	24	A-C	3-6	26-4401-24
26-4302-24	26-4502-24	24	A-D	4-7	26-4402-24
26-4303-24	26-4503-24	24	A-E	5-6	26-4403-24
26-4304-24	26-4504-24	24	A-F	4-5	26-4404-24
26-4305-24	26-4505-24	24	A-G	6-7	26-4405-24
26-4306-24	26-4506-24	24	A-H	1-6	26-4406-24
26-4307-24	26-4507-24	24	B-C	2-7	26-4407-24
26-4308-24	26-4508-24	24	B-D	1-2	26-4408-24
26-4309-24	26-4509-24	24	B-E	1-4	26-4409-24
26-4310-24	26-4510-24	24	B-F	2-3	26-4410-24
26-4311-24	26-4511-24	24	B-G	3-4	26-4411-24
26-4312-24	26-4512-24	24	B-H	2-5	26-4412-24
26-4301-32	26-4501-32	32	A-C	3-6	26-4401-32
26-4302-32	26-4502-32	32	A-D	4-7	26-4402-32
26-4303-32	26-4503-32	32	A-E	5-6	26-4403-32
26-4304-32	26-4504-32	32	A-F	4-5	26-4404-32
26-4305-32	26-4505-32	32	A-G	6-7	26-4405-32
26-4306-32	26-4506-32	32	A-H	1-6	26-4406-32
26-4307-32	26-4507-32	32	B-C	2-7	26-4407-32
26-4308-32	26-4508-32	32	B-D	1-2	26-4408-32
26-4309-32	26-4509-32	32	B-E	1-4	26-4409-32
26-4310-32	26-4510-32	32	B-F	2-3	26-4410-32
26-4311-32	26-4511-32	32	B-G	3-4	26-4411-32
26-4312-32	26-4512-32	32	B-H	2-5	26-4412-32



CLEARANCE HOLE  
FOR NO. 4 FILLISTER HEAD SCREW



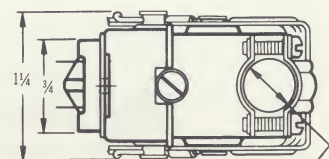
SHELL KEY



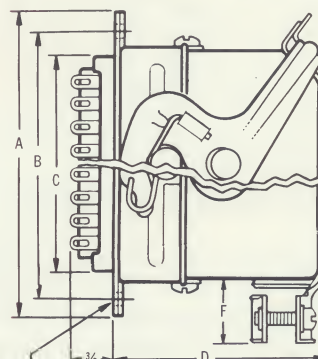
PLUG FRONT SHELL



RECEPTACLE FRONT SHELL



E. MAX CABLE DIA.



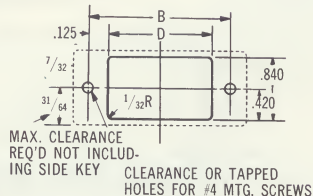
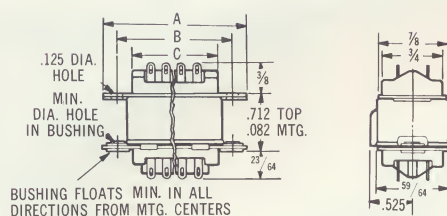
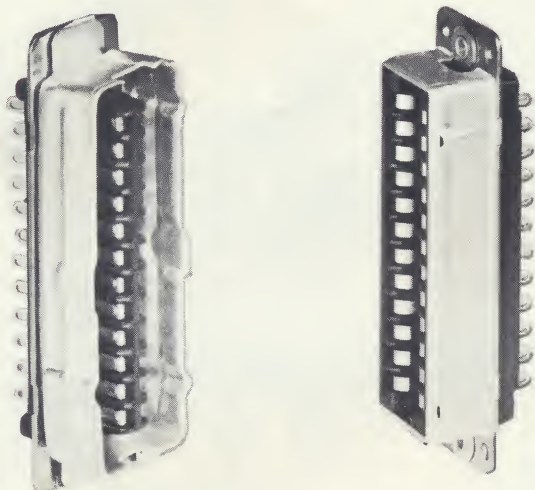
CLEARANCE HOLE  
FOR NO. 4 FILLISTER HEAD SCREW

Dimensions—Inches

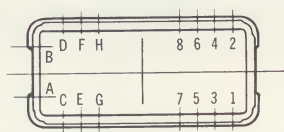
	A	B	C Max.		D		E	F	
			4301 Series	4501 Series	4301 Series	4501 Series		4301 Series	4501 Series
8 contact plug & receptacle mated	1.719	1.375	1.100	1.100	1.593	1.593	.312	.438	.455
16 contact plug & receptacle mated	2.469	2.125	1.800	1.850	1.719	1.797	.625	.517	.517
24 contact plug & receptacle mated	3.219	2.875	2.600	2.600	1.844	1.922	.625	.517	.517
32 contact plug & receptacle mated	3.969	3.625	3.350	3.350	1.906	1.984	.625	.517	.517

## Blue Ribbon 26 Series

## Barrier Polarization Type with Keyed Shells



SHELL KEY



PLUG FRONT SHELL



RECEPTACLE FRONT SHELL

Dimensions—Inches

	A	B	C	D Min.
8 contact plug & receptacle mated	1.719	1.375	1.036	1.120
16 contact plug & receptacle mated	2.469	2.125	1.784	1.868
24 contact plug & receptacle mated	3.219	2.875	2.536	2.620
32 contact plug & receptacle mated	3.969	3.625	3.286	3.370

Connectors use barrier polarization type inserts in keyed aluminum shells. Receptacle shells have female inserts and plug shells have male inserts.

The large selection of connector sizes and shell-key combinations permits use of these connectors in multiples mounted in a single frame, with no danger of mismatching.

Note: 26-4201 and 26-4101 connectors are also furnished with mounting plates having a gold iridescent iridite finish (over cadmium-plated stainless steel), per MIL-E-5400 Specification. To order, substitute a 5 for the 4 in the part number (26-5201 and 26-5101). Another 26-4201 and 26-4101 style offers taper pin adapters for the contact tails. To get these, substitute a 6 for the 4 in the part number (26-6201 and 26-6101).

## ORDERING AND AVAILABILITY INFORMATION

Plugs	Contacts	Shell Keys Letters	Numbers	Mating Receptacles
26-4101-8P	8	A	1	26-4201-8S
26-4102-8P	8	A	2	26-4202-8S
26-4103-8P	8	B	1	26-4203-8S
26-4104-8P	8	B	2	26-4204-8S
26-4101-16P	16	A-C	3-6	26-4201-16S
26-4102-16P	16	A-D	2-5	26-4202-16S
26-4103-16P	16	A-E	5-6	26-4203-16S
26-4104-16P	16	A-F	4-5	26-4204-16S
26-4105-16P	16	B-C	1-6	26-4205-16S
26-4106-16P	16	B-D	1-2	26-4206-16S
26-4107-16P	16	B-E	1-4	26-4207-16S
26-4108-16P	16	B-F	2-3	26-4208-16S
26-4101-24P	24	A-C	3-6	26-4201-24S
26-4102-24P	24	A-D	4-7	26-4202-24S
26-4103-24P	24	A-E	5-6	26-4203-24S
26-4104-24P	24	A-F	4-5	26-4204-24S
26-4105-24P	24	A-G	6-7	26-4205-24S
26-4106-24P	24	A-H	1-6	26-4206-24S
26-4107-24P	24	B-C	2-7	26-4207-24S
26-4108-24P	24	B-D	1-2	26-4208-24S
26-4109-24P	24	B-E	1-4	26-4209-24S
26-4110-24P	24	B-F	2-3	26-4210-24S
26-4111-24P	24	B-G	3-4	26-4211-24S
26-4112-24P	24	B-H	2-5	26-4212-24S
26-4101-32P	32	A-C	3-6	26-4201-32S
26-4102-32P	32	A-D	4-7	26-4202-32S
26-4103-32P	32	A-E	5-6	26-4203-32S
26-4104-32P	32	A-F	4-5	26-4204-32S
26-4105-32P	32	A-G	6-7	26-4205-32S
26-4106-32P	32	A-H	1-6	26-4206-32S
26-4107-32P	32	B-C	2-7	26-4207-32S
26-4108-32P	32	B-D	1-2	26-4208-32S
26-4109-32P	32	B-E	1-4	26-4209-32S
26-4110-32P	32	B-F	2-3	26-4210-32S
26-4111-32P	32	B-G	3-4	26-4211-32S
26-4112-32P	32	B-H	2-5	26-4212-32S



## Circular Blue Ribbon Connectors

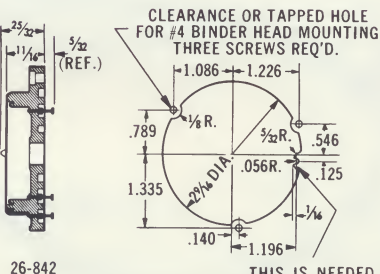
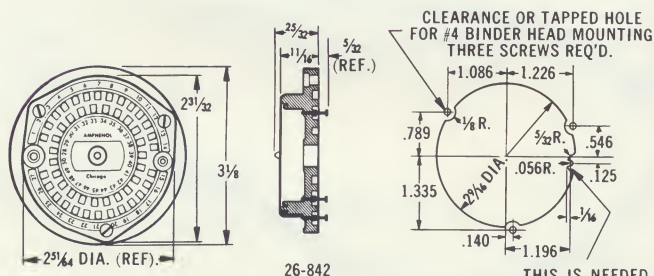
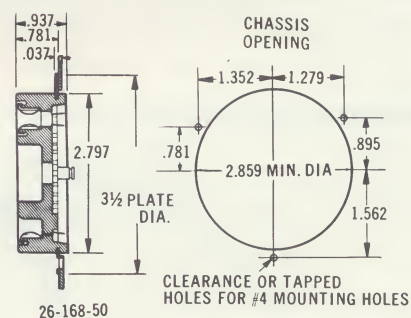
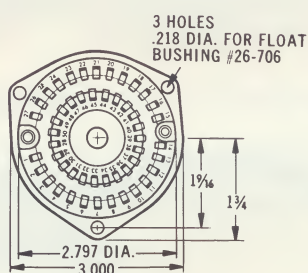
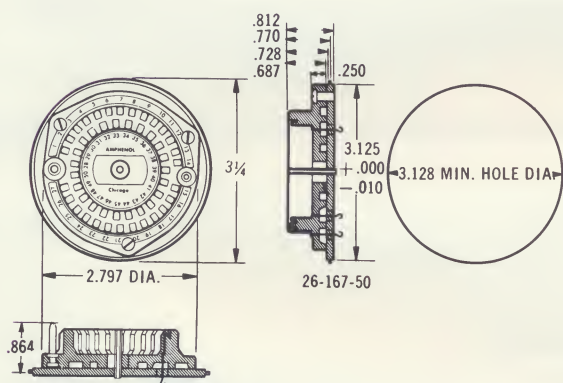
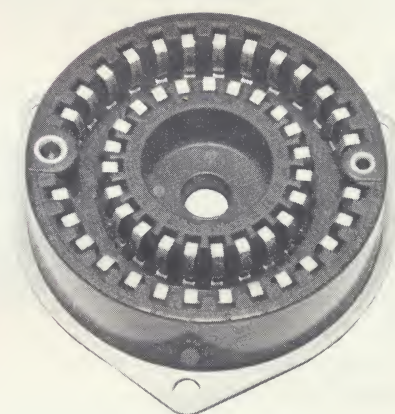
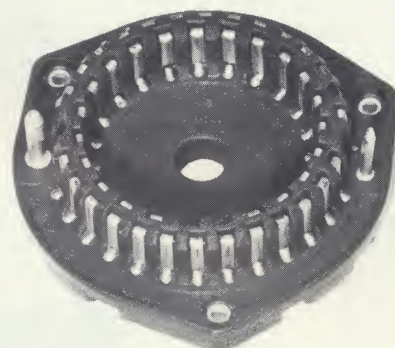
Space-saving connectors for quick and easy breaking of 50 circuits. Body diameter is less than 3 inches. Originally developed for avionic use, these mating connectors have since offered solutions to a wide variety of other limited space applications.

### 26-842 Plugs 26-168-50 Receptacles

Bodies are of molded diallyl phthalate and contacts are gold-plated, as on all Blue Ribbon connectors. Polarization and positive mating are achieved by dual, dissimilar guide pins and sockets, and by a center pin and bushing.

### 26-167-50 Plug—Hermetic Seal

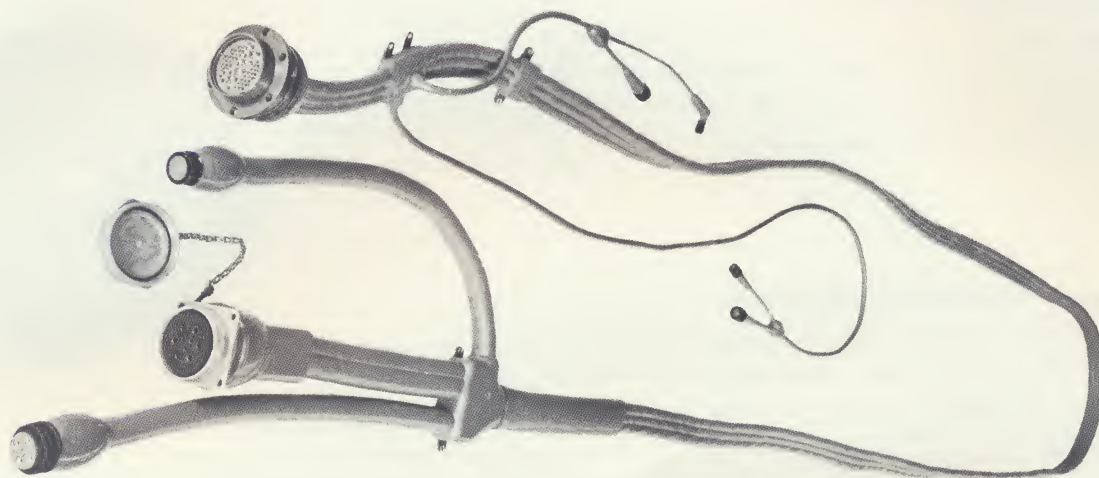
Like the 26-842, but each contact has a glass bead. The glass is bonded to the seal plate under compression, the most efficient sealing method. Connectors are completely inspected and tested before shipment. This plug mates with the 26-168-50 receptacle.



Voltage Rating: 5 AMPS { 750 Volts D.C. at Sea Level  
300 Volts D.C. at 60,000 Feet Altitude

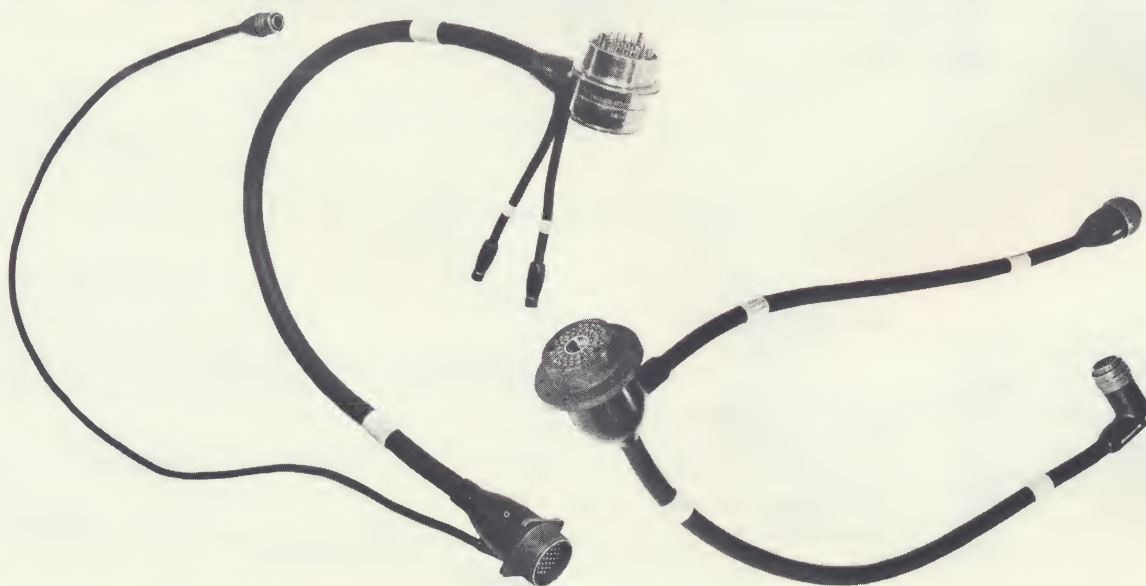
### ORDERING INFORMATION

Plugs	Contacts	Mating Receptacle
26-167-50 (Hermetic Seal)	50	26-168-50
26-842	50	

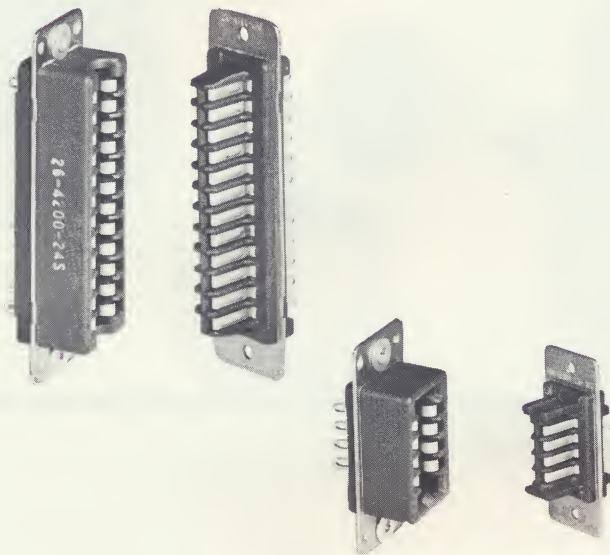


AMPHENOL is ready, willing, and able to help you with any cable assembly requirement. You will have the advantage of AMPHENOL experience and know-how developed through more than twenty years of working with the very specialized and complex problems, both in design and manufacture, that are associated with cable harness and assembly projects. AMPHENOL takes complete responsibility for all the innumerable details of component procurement, fixture construction, checkout procedure and equipment, etc., leaving you free to concentrate on engineering.

AMPHENOL facilities include the best materials laboratory in the industry, where even a mass spectrometer is available to help you evaluate and select the materials appropriate to your environmental and functional requirements. AMPHENOL'S "white rooms", with dust-free, controlled environment conditions, are available for assembly operations when you require the ultimate in contaminant-free conditions. But perhaps most important, you can trust the experience, knowledge, and judgment of the AMPHENOL team of cable assembly specialists. From ultra-sophisticated, one or two of a kind exotics to simple commercial wiring harnesses by the thousands, AMPHENOL can help you. Talk to your AMPHENOL man or contact the AMPHENOL Area Division facility near you. You'll find names and addresses on the back cover.





**Blue Ribbon 26 Series***Ribbon principle eliminates problems of bent contacts—No visual alignment needed***Barrier Polarization Type Without Shells****ORDERING INFORMATION**

Plugs	Contacts	Mating Receptacles
26-182	8	26-183
26-4100-8P	8	26-4200-8S
26-4100-16P	16	26-4200-16S
26-4100-24P	24	26-4200-24S
26-4100-32P	32	26-4200-32S

Voltage Rating: 5 AMPS { 800 Volts D.C. at Sea Level  
300 Volts D.C. at 70,000 Feet Altitude

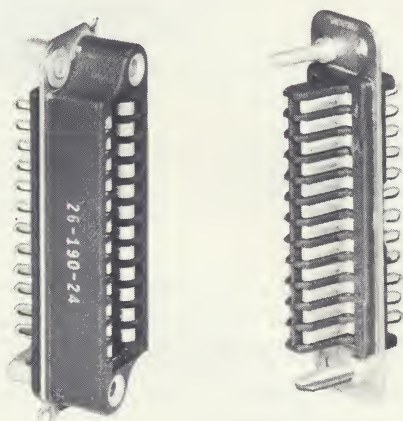
Sturdy yet compact and lightweight, the barrier polarized 26 series of plugs and receptacles provides efficient interconnection for complex rack and panel configurations, as well as for small assemblies. Multiple mounting of a number of connectors on a single frame permits the simultaneous make or break of any number of circuits. Circuit switching or re-routing is easily accomplished by proper wiring of plug.

Positive, easy mating is assured by the interlocking design. Polarization does not depend on contact arrangement, and visual alignment is unnecessary. Insertion is further aided by the Blue Ribbon Contacts, which cannot be bent in mating, and by the float-mounted receptacle.

Receptacles have molded-in, corrosion resistant, passivated stainless steel mounting plates for secure installation. Connector bodies are rectangular, for simplicity of layout.

Plugs have male inserts and receptacles have female inserts.

NOTE: 26-4200 and 26-4100 connectors are also furnished with mounting plates having a gold iridescent iridite finish (over cadmium-plated stainless steel), per MIL-E-5400 Specification. To order, substitute a 5 for the 4 in the part number (26-5200 and 26-5100). Another 26-4200 and 26-4100 style offers taper pin adapters for the contact tails. To get these, substitute a 6 for the 4 in the part number (26-6200 and 26-6100).

**Pin Polarization Type Without Shells**

26 series pin polarized plugs and receptacles are similar in construction to the barrier type but are designed to withstand increased vibration and impact forces. This feature, together with their light weight and compactness, make these connectors ideal for airborne or mobile applications.

Positive contact is assured by the dual purpose polarizing pins, which also permit easy plug-in without danger of mismatching or need for visual alignment.

Receptacles are female and plugs are male.

**ORDERING INFORMATION**

Plugs	Contacts	Mating Receptacles
26-159-16	16	26-190-16
26-159-24	24	26-190-24
26-159-32	32	26-190-32

Voltage Rating: 5 AMPS { 750 Volts D.C. at Sea Level  
300 Volts D.C. at 60,000 Feet Altitude



### AMPHENOL WESTERN CONNECTOR DIVISION DISTRICT SALES OFFICES

<b>CALIFORNIA</b>	<b>LOS ANGELES</b>	Amphenol District Sales Office Wm. Monteforte	17000 Ventura, Suite 306 (Encino)	213 STate 8-8560
	<b>SAN DIEGO</b>	Amphenol District Sales Office Richard Colt	5054 Lincoln St. (La Mesa)	714 HOpkins 3-9331
	<b>SAN FRANCISCO</b>	Amphenol District Sales Office Donn Moore	1826 Industrial Way, Suite 8 (Redwood City)	415 369-2981
<b>COLORADO</b>	<b>DENVER 9</b>	R. G. Bowen Co., Inc.	721 S. Broadway	303 RAcE 2-4641
<b>HAWAII</b>	<b>HONOLULU 14</b>	Donn H. Burcham Co.	949 McCully St.	993-149
<b>WASHINGTON</b>	<b>SEATTLE</b>	Amphenol District Sales Office Jim Clarizio	14444 Sunset Highway, P.O. Box 726 (Bellevue)	206 SHeewood 6-5363

### AMPHENOL MIDWESTERN CONNECTOR DIVISION DISTRICT SALES OFFICES

<b>ILLINOIS</b>	<b>CHICAGO</b>	Amphenol District Sales Office John N. Koys	2837 S. 25th Ave. (Broadview)	312 921-8670
<b>INDIANA</b>	<b>INDIANAPOLIS 5</b>	Leslie M. DeVoe Co.	4010 Washington Blvd.	317 ATwater 3-1395
<b>MICHIGAN</b>	<b>DETROIT</b>	Amphenol District Sales Office Gary A. Yeomans	960 E. Maple Rd., Suite 126 (Birmingham)	313 646-1262
<b>MINNESOTA</b>	<b>MINNEAPOLIS 16</b>	Amphenol District Sales Office Charles W. Kucera	6121 Excelsior Blvd.	612 929-7879
<b>MISSOURI</b>	<b>KANSAS CITY</b>	Amphenol District Sales Office John E. Jansen	11015 E. 39th St. Suite 5 (Independence)	816 356-5400
	<b>ST. LOUIS</b>	Amphenol District Sales Office Joseph Svehla	1060 Derhake Road Florissant	314 TEmpLe 8-6996
<b>NEW MEXICO</b>	<b>ALBUQUERQUE</b>	Albuquerque Electronics Co.	2329 Wisconsin, N.E.	505 298-2628
<b>OHIO</b>	<b>CLEVELAND 16</b>	Amphenol District Sales Office John J. Carsello	20545 Center Ridge Road, Suite 242	216 EDison 1-9100
	<b>DAYTON 39</b>	Amphenol District Sales Office Max F. Gray	3300 S. Dixie Drive, Room 121A	513 298-5002
<b>TEXAS</b>	<b>DALLAS</b>	Amphenol District Sales Office Edward J. Beavan	811 S. Central Expressway, Suite 200B (Richardson)	214 ADams 5-8318

### AMPHENOL EASTERN CONNECTOR DIVISION DISTRICT SALES OFFICES

<b>DISTRICT OF COLUMBIA</b>	<b>WASHINGTON</b>	Amphenol District Sales Office Stephen R. Kelleher	725 15th St., N.W. Suite 1000	202 EXecutive 3-2205
<b>FLORIDA</b>	<b>WINTER PARK</b>	Amphenol District Sales Office J. Aylward	180 Knowles Ave. Suite 9	305 647-5504
<b>GEORGIA</b>	<b>ATLANTA 5</b>	Amphenol District Sales Office Ed. Smith	3224 Peachtree Rd., N.E.	404 233-1569
<b>MASSACHUSETTS</b>	<b>BOSTON</b>	Richard Purinton, Inc.	11 Muzzey Street (Lexington 73)	617 VOLunteer 2-8300
<b>NEW JERSEY</b>	<b>CAMDEN</b>	Amphenol District Sales Office Robert Meade	6525 S. Crescent Blvd. Suite 212 (Pennsauken)	609 665-2870
<b>NEW YORK</b>	<b>NEW YORK</b>	Amphenol District Sales Office Glenn Omholt	310 Northern Blvd. (Great Neck, L.I.)	212 HUnter 2-4700
	<b>SYRACUSE 3</b>	Amphenol District Sales Office Larry McCahill	James Oak Bldg., Room 205 404 Oak Street	315 472-7529

### GOVERNMENT CONTRACTS & SYSTEMS DEPARTMENT

<b>ALABAMA</b>	<b>HUNTSVILLE</b>	Tec-Sel, Inc., 43 Traylor Island Glenn H. Gross, Engineering Representative	205 534-7304
<b>CALIFORNIA</b>	<b>LOS ANGELES</b>	Kenneth Collins, 17000 Ventura Blvd., Suite 306 (Encino) area manager	213 STate 8-8560
<b>DISTRICT OF COLUMBIA</b>	<b>WASHINGTON 5</b>	Carl E. Palmer, 625 Investment Bldg., 1511 K St., N.W. area manager	202 EXecutive 3-6223
<b>ILLINOIS</b>	<b>CHICAGO</b>	John E. Wilkinson, 2801 S. 25th Ave. (Broadview) manager	312 COlumbus 1-2000
<b>NEW JERSEY</b>	<b>FAIR LAWN</b>	Bennett Brachman, Fair Lawn Industrial Park area manager	201 SWarhmore 7-6575
<b>OHIO</b>	<b>DAYTON</b>	John E. Wilkinson, manager 333 W. First St., Suite 356	513 223-3583 223-9602

### AMPHENOL-BORG INTERNATIONAL OPERATIONS

<b>CANADA</b>	Amphenol Canada Limited, 349 Carlaw Avenue, Toronto 8, Ontario offices: Saedco Limited, 2277 Riverside Drive, Suite 209, Ottawa, Ontario Renfrew Electric Co. Limited, 5890 Monkland Avenue, Suite 203, Montreal, Quebec Radiovision Sales Limited, 351A—8th Avenue, S.W., Calgary, Alberta		
<b>ENGLAND</b>	Amphenol-Borg Limited, Thanet Way, Tankerton, Whitstable, Kent Representatives in Norway, Sweden, Denmark, Finland, Spain and Portugal		
<b>JAPAN</b>	Dai-Ichi Denshi Kabushiki Kaisha, #33, 4-Chome, Kamidori, Shibuya-ku, Tokyo		
<b>WEST GERMANY</b>	Amphenol-Borg Electronics GmbH, 8024 Deisenhofen B. Munich Representatives in Italy, France, Switzerland, Austria, Belgium, Luxembourg, The Netherlands and Greece		
<b>OTHER INTERNATIONAL AREAS</b>	Contact: International Operations Amphenol-Borg Electronics Corporation, 2801 South 25th Avenue, Broadview, Illinois Cable: Amphenol-Broadview		